

**FEB/FY06**

**RAVENNA ARMY AMMUNITION  
PLANT  
Ohio**

**Army Defense Environmental  
Restoration Program  
Installation Action Plan**

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## Statement of Purpose

The purpose of the Installation Action Plan (IAP) is to outline the total multi-year Installation Cleanup Program for an installation. The plan identifies environmental cleanup requirements at each site or area of concern, and proposes a comprehensive, installation-wide approach, with associated costs and schedules, to conduct investigations and necessary remedial actions.

In an effort to coordinate planning information between the restoration manager, US Army Environmental Center (USAEC), Ravenna Army Ammunition Plant, executing agencies, and regulatory agencies, an IAP was completed. The IAP is used to track requirements, schedules and tentative budgets for all major Army installation cleanup programs.

All site-specific funding and schedule information has been prepared according to projected overall Army funding levels and is, therefore, subject to change.

The following agencies contributed to the formulation and completion of this Installation Action Plan during a planning workshop held on 22-23 February 2006:

**Company/Installation/Branch**

Base Realignment and Closure (BRAC) - Rock Island Field Office  
Engineering & Environment, Inc. for USAEC US Army Environmental Center (USAEC)  
Management Solutions  
National Guard Bureau (NGB)  
Ohio Environmental Protection Agency  
Ohio Army National Guard (OHARNG)  
OHARNG-RTLS-EN  
Ravenna Army Ammunition Plant (RVAAP)  
US Army Corps of Engineers, Kansas City District  
US Army Corps of Engineers, Louisville District

## Acronyms & Abbreviations

<b>ACSIM</b>	Assistant Chief of Staff for Installation Management
<b>AEDB-R</b>	Army Environmental Database - Restoration
<b>AOC</b>	Area of Concern
<b>ASR</b>	Archive Search Report
<b>bgs</b>	below ground surface
<b>BRAC</b>	Base Realignment and Closure
<b>CERCLA</b>	Comprehensive Environmental Response Compensation and Liability Act
<b>CTC</b>	cost-to-complete
<b>CTT</b>	Closed, Transferred, and Transferring
<b>cy</b>	cubic yards
<b>DD</b>	Decision Document
<b>DDESB</b>	Department of Defense Explosive Safety Board
<b>DERP</b>	Defense Environmental Restoration Program
<b>DFFO</b>	Director's Final Findings & Orders
<b>DSERTS</b>	Defense Site Environmental Restoration Tracking System (now AEDB-R)
<b>EE/CA</b>	Engineering Evaluation and Cost Analysis
<b>EOD</b>	Explosive Ordnance Disposal
<b>EPA</b>	Environmental Protection Agency
<b>ER,A</b>	Environmental Restoration, Army (formerly called DERA)
<b>FPRI</b>	Fixed Price Remediation with Insurance
<b>FS</b>	Feasibility Study
<b>FY</b>	Fiscal Year
<b>GOCO</b>	Government-Owned, Contractor-Operated
<b>HMX</b>	octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazacine
<b>IAP</b>	Installation Action Plan
<b>IMA</b>	Installation Management Agency
<b>IRA</b>	Interim Removal Action
<b>IRP</b>	Installation Restoration Program
<b>LAP</b>	Load, Assemble and Pack
<b>LL</b>	Load Line
<b>LTM</b>	Long-term Management
<b>LUC</b>	Land Use Control
<b>MACOM</b>	Major Command
<b>MC</b>	Munitions Constituents
<b>MEC</b>	Munitions and Explosives of Concern
<b>MCL</b>	Maximum Contaminant Level
<b>mm</b>	millimeter
<b>MMRP</b>	Military Munitions Response Program
<b>NACA</b>	National Advisory Committee on Aeronautics
<b>NE</b>	Northeast or Not Evaluated
<b>NFA</b>	No Further Action
<b>NGB</b>	National Guard Bureau
<b>NPDES</b>	National Pollutant Discharge Elimination System
<b>NPL</b>	National Priorities List
<b>ODA</b>	Open Demolition Area
<b>OE</b>	Ordnance and Explosives

## Acronyms & Abbreviations

<b>OHARNG</b>	Ohio Army National Guard
<b>Ohio EPA</b>	Ohio Environmental Protection Agency
<b>OMA</b>	Operation and Maintenance Account
<b>OSC</b>	Operations Support Command
<b>OSD</b>	Office of the Secretary of Defense
<b>PA</b>	Preliminary Assessment
<b>PBC</b>	Performance-Based Contract
<b>PCB</b>	Polychlorinated Biphenyls
<b>PMP</b>	Property Management Plan
<b>ppm</b>	parts per million
<b>PY</b>	Prior Year
<b>RA</b>	Remedial Action
<b>RA(C)</b>	Remedial Action (Construction)
<b>RA(O)</b>	Remedial Action (Operation)
<b>RAB</b>	Restoration Advisory Board
<b>RAC</b>	Risk Assessment Code
<b>RC</b>	Response Complete
<b>RCRA</b>	Resource Conservation and Recovery Act
<b>RD</b>	Remedial Design
<b>RDX</b>	hexahydro-1,3,5-trinitro-1,3,5-triazine
<b>REIMS</b>	Ravenna Environmental Information Management System
<b>REM</b>	Removal
<b>RI</b>	Remedial Investigation
<b>RIP</b>	Remedy-in-Place
<b>ROD</b>	Record of Decision
<b>RRSE</b>	Relative Risk Site Evaluation
<b>RTLS</b>	Ravenna Training and Logistics Site
<b>RVAAP</b>	Ravenna Army Ammunition Plant
<b>SAIC</b>	Science Application International Corporation
<b>SI</b>	Site Inspection
<b>SVOC</b>	Semi-Volatile Organic Compounds
<b>TAPP</b>	Technical Assistance for Public Participation
<b>TD</b>	Thermal Decomposition
<b>TNT</b>	2,4,6-trinitrotoluene
<b>TRC</b>	Technical Review Committee
<b>USACE</b>	United States Army Corps of Engineers
<b>USACHPPM</b>	United States Army Center for Health Promotion and Preventive Medicine
<b>USAEC</b>	United States Army Environmental Center
<b>USAEHA</b>	United States Army Environmental Hygiene Agency (now USACHPPM)
<b>USATCES</b>	US Army Technical Center for Explosives Safety
<b>USATHAMA</b>	United States Army Toxic and Hazardous Materials Agency (now USAEC)
<b>USEPA</b>	United States Environmental Protection Agency
<b>UST</b>	Underground Storage Tank
<b>UXO</b>	Unexploded Ordnance
<b>VOC</b>	Volatile Organic Compounds
<b>WBG</b>	Winklepeck Burning Ground

**Installation Location:** Up until 1999, the Ravenna Army Ammunition Plant (RVAAP) was identified as a 21,419-acre installation. The property boundary was resurveyed by the Ohio Army National Guard (OHARNG) over a two year period 2002 and 2003 and the actual total acreage of the property was found to be 21,683.289 acres. As of February 2006, a total of 20,403 acres of the former 21,683 acre RVAAP have been transferred to the United States Property and Fiscal Officer (USP&FO) for Ohio for use by the OHARNG as a military training site.

The current RVAAP consists of 1,280 acres in several distinct parcels scattered throughout the confines of the OHARNG Ravenna Training and Logistics Site (RTLS). The RVAAP and the RTLS are collocated on contiguous parcels of property and the RTLS perimeter fence completely encloses the remaining parcels of the RVAAP. The RTLS is in northeastern Ohio within Portage and Trumbull Counties, approximately 4.8 kilometers (3 miles) east northeast of the city of Ravenna and approximately 1.6 kilometers (1 mile) northwest of the city of Newton Falls. The RVAAP portions of the property are solely located within Portage County. The RTLS (inclusive of the RVAAP) is a parcel of property approximately 17.7 kilometers (11 miles) long and 5.6 kilometers (3.5 miles) wide bounded by State Route 5, the Michael J. Kirwan Reservoir, and the CSX System Railroad on the south; Garret, McCormick, and Berry roads on the west; the Norfolk Southern Railroad on the north; and State Route 534 on the east (see Figures 1-1 and 1-2). The RTLS is surrounded by several communities: Windham on the north; Garrettsville 9.6 kilometers (6 miles) to the northwest; Newton Falls 1.6 kilometers (1 mile) to the southeast; Charlestown to the southwest; and Wayland 4.8 kilometers (3 miles) to the south. When the RVAAP was operational the RTLS did not exist and the entire 21,683-acre parcel was a government-owned, contractor-operated (GOCO) industrial facility. The RVAAP Installation Restoration Program (IRP) encompasses investigation and cleanup of past activities over the entire 21,683 acres of the former RVAAP and therefore references to the RVAAP in this document are considered to be inclusive of the historical extent of the RVAAP, which is inclusive of the combined acreages of the current RTLS and RVAAP, unless otherwise specifically stated.

**Installation Mission:** In FY93, the mission of RVAAP was changed from inactive-maintained to modified caretaker status (limited mission). MKM Engineers is the operating contractor.

**Lead Organization:**

Assistant Chief of Staff for Installation Management (ACSIM)  
Base Realignment and Closure (BRAC) for RVAAP  
National Guard Bureau (NGB)/OHARNG for RTLS

**Lead Executing Agencies:**

US Army Corps of Engineers, Louisville District

**Regulatory Participation:**

**Federal:** US Environmental Protection Agency  
**State:** Ohio Environmental Protection Agency

**National Priorities List (NPL) Status:** RVAAP is not an NPL site.

**Installation Restoration Advisory Board (RAB)/Technical Review Committee (TRC)/Technical Assistance for Public Participation (TAPP) Status:** RVAAP has an active RAB, which was established in 1996. It contains twenty-five members with eight elected officials. The contract for Technical Assistance for Public Participation contract is being extended.

### **Installation Program Summaries**

#### **IRP**

Primary Contaminants of Concern: Explosives, Metals, Propellants, Semi-volatile Organic Compounds (SVOCs), Volatile Organic Compounds (VOCs), Nitrates and Mustard Agent  
Affected Media of Concern: Groundwater, Soil, Surface Water, Sediment  
Estimated Date for Remedy-In-Place (RIP)/Response Complete (RC): 2007/2037  
Funding to Date (up to FY05): \$40,400K  
Current Year Funding (FY06): \$4,835K  
Cost-to-Complete (FY07+): \$32,291K

#### **MMRP**

Primary Contaminants of Concern: Munitions and Explosive of Concern ((MEC), Munitions Constituents (MC)  
Affected Media of Concern: Soil, Surface Water, Sediment  
Estimated Date for Remedy-In-Place (RIP)/Response Complete (RC): 2012  
Funding to Date (up to FY05): \$290K  
Current Year Funding (FY06): \$0  
Cost-to-Complete (2007+): \$8,848K

## Cleanup Program Summary

**Installation Historic Activity:** RVAAP is a government-owned, contractor-operated (GOCO) US Army BRAC facility. RVAAP was excessed in 1992. Storage of explosives continued until 2004. The installation is approximately 11 miles long and 3.5 miles wide area. In August 1940, a tract of land covering 25,000 acres was purchased by the United States Government in the northeastern part of Ohio in Portage and Trumbull counties. Construction of the load, assemble, and pack (LAP) facility started in September 1940. Munitions production activities started in August 1941. The primary missions of the facility included depot storage and ammunition loading, assembling and packing. The facility went through several name changes during its history before being designated the RVAAP in 1961.

The facilities were operated by the Atlas Powder Company from September 1940 until the end of World War II when the operation of the plant was turned over to the Ordnance Department. From 1946 to 1949, the ammonium nitrate line was operated by the Silas Mason Company for the production of ammonium nitrate fertilizer. The plant was placed in standby status in 1950. The plant was reactivated during the Korean War for the loading and packing of major caliber projectiles and components. All production ended in August 1957; and in October 1957, the installation was again placed in a standby condition.

From January to July 1961, Load Line 12 was used to melt out and recover explosives from bombs, the first operation of this type in the ammunition industry. The RVAAP was once again reactivated in May 1968 to produce munitions on three load lines and two component lines in support of the Vietnam War. These facilities were subsequently deactivated in August 1972. A mission for the demilitarization of various munitions continued on a periodic basis through 1992.

RVAAP received a Resource Conservation and Recovery Act (RCRA) Part A permit in 1980 for the storage and treatment of off-spec munitions and munitions-related waste. RVAAP submitted a RCRA Part B permit application in 1992 for the installation's Open Burning and Open Detonation Grounds and a hazardous waste storage building. Open Demolition Area (ODA) # 2 (RVAAP-04) is the only active RCRA unit at the RVAAP. All others have been closed.

The Operations Support Command (OSC) transferred control and operation of 16,164 acres to the NGB in May 1999. In March 2002, an agreement was signed to transfer an additional 3,774 uncontaminated acres to the NGB with the remaining acreage to be transferred as restoration of the sites is completed. As of February 2006, a total of 20,403 acres of the former RVAAP have been transferred to the NGB for use by the OHARNG.

**Mission:** To complete Installation Restoration Program (IRP), Military Munitions Response Program (MMRP), and decontamination and demolition of excess buildings for transfer of all property to NGB, with subsequent transfer of accountability to OHARNG by 2018.

**Regulatory Status:** RVAAP is not on the USEPA NPL, although it is in the USEPA CERCLIS database. Management of the IRP sites follows CERCLA requirements. There are a number of other regulatory programs addressing other non-IRP sites.

## Cleanup Program Summary

In June 2004, the Army and Ohio EPA signed the Director's Findings and Orders to authorize continued use of Open Demolition Area #2 to support environmental restoration activities (blow in place and emergency demolition actions are authorized without the need to obtain emergency permits). In addition, the Orders authorize the investigation of deactivation furnace soils under Comprehensive Environmental Response, Compensation and Liability Act of 1980 (CERCLA); and authorize the conduct of groundwater monitoring at RVAAP-01 and 04 under CERCLA. Ravenna Army Ammunition Plant will close the Demolition Area #2 RCRA unit when it is no longer needed to support restoration.

*Major Issues:* Continued support of all the stakeholders, including the public, at RVAAP will be needed to meet the schedules, objectives, and cost estimates identified in this IAP. Completion of the IRP and MMRP projects at some sites may be delayed due to difficulties in getting regulatory approval to thermally treat explosive-contaminated buildings containing PCB paints. There may also be scheduling setbacks due to delays in getting funding for removal of large concrete structures in the load lines needed for training by the OHARNG and for the MMRP.

### **IRP**

- Award of Performance-based Contract (PBC) 05 for High Relative Risk sites (FY05)
- Completion of the facility-wide surface water assessment (FY05)
- Finalize RI for load lines 1, 2, 3, 4, 12 (FY04)
- Finalize Load Line 11 IRA (FY04)
- Signing of findings and orders (FY04)
- Award and completion of field work for the 14 sites characterization study (FY05-06)
- Initiation of facility-wide groundwater monitoring plan (FY03)
- Completion of RVAAP facility-wide Human Health Risk Manual (FY04)
- Completion of RVAAP facility-wide Ecological Risk Work Plan (FY04)
- Establishment of the RVAAP communication and environmental information management system(REIMS), including websites (FY04)
- Initiated comprehensive inter-agency project schedule (FY04)
- Finalize Ordnance and Explosives ASR (FY04)
- Finalize Winklepeck Burning Ground Focused Feasibility Study (FY05)

#### Future Plan of Action:

- Complete projects associated with PBC 03, receive site RIP/RC September 2007
- Complete projects associated with PBC 05, receive site RIP/RC September 2007
- Continue comprehensive inter-agency project schedule
- Finalize and implement facility wide Project Management Plan
- Finalize Property Management Plan [Land Use Controls (LUCs)]

### **MMRP**

Progress to Date: PA for the Installation was completed as of March 2004

#### Future Plan of Action:

- Site Inspection scheduled for award in 2005, with completion in 2007.

## Transfer Summary

**Parcel Name:** 40mm Test Range/Waterworks Pond

**Parcel Size:** 58 Acres

**Associated Sites:**

RVAAP-016-R-01

RVAAP-032-R-01

RVAAP-16

RVAAP-32

**Transfer Date:** 201009

**Current Land Use:** Inactive Excess, Army Ammunition Plant

**Future Land Use:** Military Training

**Transfer Strategy:** Transferred within Federal Government, Army Retained

**Transferee:** NGB, Ohio National Guard

**Other Issues Affecting Transfer:** Infrastructure Demolition and Removal

**Parcel Name:** Anchor Test Area

**Parcel Size:** 2 Acres

**Associated Sites:**

RVAAP-048-R-01

RVAAP-48

**Transfer Date:** 200909

**Current Land Use:** Inactive Excess, Army Ammunition Plant

**Future Land Use:** Military Training

**Transfer Strategy:** Transferred within Federal Government, Army Retained

**Transferee:** NGB, Ohio National Guard

**Other Issues Affecting Transfer:** Infrastructure Demolition and Removal

**Parcel Name:** Building 1039

**Parcel Size:** .40 Acres

**Associated Sites:**

None

**Transfer Date:** 200709

**Current Land Use:** Inactive Excess, Army Ammunition Plant

**Future Land Use:** Military Training

**Transfer Strategy:** Transferred within Federal Government, Army Retained

**Transferee:** NGB, Ohio National Guard

**Parcel Name:** Buildings 1026, 1034, 1034A, 1037, 1037A, 1038, etc

**Parcel Size:** 8.60 Acres

**Associated Sites:**

None

**Transfer Date:** 201409

**Current Land Use:** Inactive Excess, Army Ammunition Plant

**Future Land Use:** Military Training

**Transfer Strategy:** Transferred within Federal Government, Army Retained

**Transferee:** NGB, Ohio National Guard

## Transfer Summary

**Parcel Name:** Clean Hard Landfill

**Parcel Size:** 5 Acres

**Associated Sites:**

RVAAP-019-R-01

RVAAP-19

**Transfer Date:** 200909

**Current Land Use:** Inactive Excess, Army Ammunition Plant

**Future Land Use:** Military Training

**Transfer Strategy:** Transferred within Federal Government, Army Retained

**Transferee:** NGB, Ohio National Guard

**Other Issues Affecting Transfer:** Infrastructure Demolition and Removal

**Parcel Name:** Cobbs Ponds

**Parcel Size:** 9 Acres

**Associated Sites:**

RVAAP-29

**Transfer Date:** 200709

**Current Land Use:** Inactive Excess, Army Ammunition Plant

**Future Land Use:** Military Training

**Transfer Strategy:** Transferred within Federal Government, Army Retained

**Transferee:** NGB, Ohio National Guard

**Other Issues Affecting Transfer:** Infrastructure Demolition and Removal

**Parcel Name:** Load Line 2

**Parcel Size:** 212 Acres

**Associated Sites:**

RVAAP-09

**Transfer Date:** 200709

**Current Land Use:** Inactive Excess, Army Ammunition Plant

**Future Land Use:** Military Training

**Transfer Strategy:** Transferred within Federal Government, Army Retained

**Transferee:** NGB, Ohio National Guard

**Other Issues Affecting Transfer:** Infrastructure Demolition and Removal

**Parcel Name:** Load Line 1

**Parcel Size:** 160 Acres

**Associated Sites:**

RVAAP-08

**Transfer Date:** 2008

**Current Land Use:** Inactive Excess, Army Ammunition Plant

**Future Land Use:** Military Training

**Transfer Strategy:** Transferred within Federal Government, Army Retained

**Transferee:** NGB, Ohio National Guard

**Other Issues Affecting Transfer:** Infrastructure Demolition and Removal

## Transfer Summary

**Parcel Name:** Load Line 10

**Parcel Size:** 36 Acres

**Associated Sites:**

RVAAP-43

**Transfer Date:** 2010

**Current Land Use:** Inactive Excess, Army Ammunition Plant

**Future Land Use:** Military Training

**Transfer Strategy:** Transferred within Federal Government, Army Retained

**Transferee:** NGB, Ohio National Guard

**Other Issues Affecting Transfer:** Infrastructure Demolition and Removal

**Parcel Name:** Load Line 11

**Parcel Size:** 47 Acres

**Associated Sites:**

RVAAP-44

**Transfer Date:** 200609

**Current Land Use:** Inactive Excess, Army Ammunition Plant

**Future Land Use:** Military Training

**Transfer Strategy:** Transferred within Federal Government, Army Retained

**Transferee:** NGB, Ohio National Guard

**Other Issues Affecting Transfer:** Infrastructure Demolition and Removal

**Parcel Name:** Load Line 12

**Parcel Size:** 75 Acres

**Associated Sites:**

RVAAP-012-R-01

RVAAP-12

**Transfer Date:** 200709

**Current Land Use:** Inactive Excess, Army Ammunition Plant

**Future Land Use:** Military Training

**Transfer Strategy:** Transferred within Federal Government, Army Retained

**Transferee:** NGB, Ohio National Guard

**Other Issues Affecting Transfer:** Infrastructure Demolition and Removal

**Parcel Name:** Load Line 3

**Parcel Size:** 174 Acres

**Associated Sites:**

RVAAP-10

**Transfer Date:** 2008

**Current Land Use:** Inactive Excess, Army Ammunition Plant

**Future Land Use:** Military Training

**Transfer Strategy:** Transferred within Federal Government, Army Retained

**Transferee:** NGB, Ohio National Guard

**Other Issues Affecting Transfer:** Infrastructure Demolition and Removal

## Transfer Summary

**Parcel Name:** Load Line 4

**Parcel Size:** 129 Acres

**Associated Sites:**

RVAAP-11

**Transfer Date:** 200709

**Current Land Use:** Inactive Excess, Army Ammunition Plant

**Future Land Use:** Military Training

**Transfer Strategy:** Transferred within Federal Government, Army Retained

**Transferee:** NGB, Ohio National Guard

**Other Issues Affecting Transfer:** Infrastructure Demolition and Removal

**Parcel Name:** Load Line 5

**Parcel Size:** 39 Acres

**Associated Sites:**

RVAAP-39

**Transfer Date:** 201009

**Current Land Use:** Inactive Excess, Army Ammunition Plant

**Future Land Use:** Military Training

**Transfer Strategy:** Transferred within Federal Government, Army Retained

**Transferee:** NGB, Ohio National Guard

**Other Issues Affecting Transfer:** Infrastructure Demolition and Removal

**Parcel Name:** Load Line 6

**Parcel Size:** 43 Acres

**Associated Sites:**

RVAAP-033-R-01

RVAAP-33

**Transfer Date:** 201009

**Current Land Use:** Inactive Excess, Army Ammunition Plant

**Future Land Use:** Military Training

**Transfer Strategy:** Transferred within Federal Government, Army Retained

**Transferee:** NGB, Ohio National Guard

**Other Issues Affecting Transfer:** Infrastructure Demolition and Removal

**Parcel Name:** Load Line 7

**Parcel Size:** 37 Acres

**Associated Sites:**

RVAAP-40

**Transfer Date:** 201009

**Current Land Use:** Inactive Excess, Army Ammunition Plant

**Future Land Use:** Military Training

**Transfer Strategy:** Transferred within Federal Government, Army Retained

**Transferee:** NGB, Ohio National Guard

**Other Issues Affecting Transfer:** Infrastructure Demolition and Removal

## Transfer Summary

**Parcel Name:** Load Line 8

**Parcel Size:** 44 Acres

**Associated Sites:**

RVAAP-41

**Transfer Date:** 201009

**Current Land Use:** Inactive Excess, Army Ammunition Plant

**Future Land Use:** Military Training

**Transfer Strategy:** Transferred within Federal Government, Army Retained

**Transferee:** NGB, Ohio National Guard

**Other Issues Affecting Transfer:** Infrastructure Demolition and Removal

**Parcel Name:** Load Line 9

**Parcel Size:** 106 Acres

**Associated Sites:**

RVAAP-42

**Transfer Date:** 201009

**Current Land Use:** Inactive Excess, Army Ammunition Plant

**Future Land Use:** Military Training

**Transfer Strategy:** Transferred within Federal Government, Army Retained

**Transferee:** NGB

**Other Issues Affecting Transfer:** Infrastructure Demolition and Removal

**Parcel Name:** Open Demolition Area #2

**Parcel Size:** 25 Acres

**Associated Sites:**

RVAAP-004-R-01

RVAAP-04

**Transfer Date:** 201209

**Current Land Use:** Inactive Excess, Army Ammunition Plant

**Future Land Use:** Military Training

**Transfer Strategy:** Transferred within Federal Government, Army Retained

**Transferee:** NGB, Ohio National Guard

**Other Issues Affecting Transfer:** Infrastructure Demolition and Removal

**Parcel Name:** Pistol Range

**Parcel Size:** 20 Acres

**Associated Sites:**

RVAAP-36

**Transfer Date:** 2005

**Current Land Use:** Inactive Excess, Army Ammunition Plant

**Future Land Use:** Military Training

**Transfer Strategy:** Transferred within Federal Government, Army Retained

**Transferee:** NGB, Ohio National Guard

## Transfer Summary

**Parcel Name:** Ramsdell Landfill

**Parcel Size:** 15 Acres

**Associated Sites:**

RVAAP-001-R-01

RVAAP-01

**Transfer Date:** 200709

**Current Land Use:** Inactive Excess, Army Ammunition Plant

**Future Land Use:** Military Training

**Transfer Strategy:** Transferred within Federal Government, Army Retained

**Transferee:** NGB, Ohio National Guard

**Other Issues Affecting Transfer:** Infrastructure Demolition and Removal

**Parcel Name:** Wet Storage

**Parcel Size:** 36 Acres

**Associated Sites:**

RVAAP-45

**Transfer Date:** 201009

**Current Land Use:** Inactive Excess, Army Ammunition Plant

**Future Land Use:** Military Training

**Transfer Strategy:** Transferred within Federal Government, Army Retained

**Transferee:** NGB, Ohio National Guard

**Other Issues Affecting Transfer:** Infrastructure Demolition and Removal

**Parcel Name:** Winklepeck Burning Grounds

**Parcel Size:** 200 Acres

**Associated Sites:**

RVAAP-005-R-01

RVAAP-05

**Transfer Date:** 200609

**Current Land Use:** Inactive Excess, Army Ammunition Plant

**Future Land Use:** Military Training

**Transfer Strategy:** Transferred within Federal Government, Army Retained

**Transferee:** NGB, Ohio National Guard

**Other Issues Affecting Transfer:** Infrastructure Demolition and Removal

### *Infrastructure Demolition and Removal*

Load Line 11; Winklepeck Burning Grounds	2006
Ramsdell Quarry Landfill; Pistol Range; Load Lines 1,2,3,4	2007
Load Line 12	2008
Load Lines 5,6,7,8, 9,10; 40mm Test Range, Anchor Test Area, Wet Storage, Landfill North of Winklepeck, Open Demolition Area #2	2009+

# RAVENNA ARMY AMMUNITION PLANT

## Installation Restoration Program

**Total AEDB-R IRP Sites/AEDB-R sites with Response Complete:** 52/21

***Different Site Types:***

3 Above Ground Storage Tanks	3 Burn Areas
1 Contaminated Building	1 Contaminated Soil Pile
3 Disposal Pits/Dry Wells	1 Explosive Ordnance Disposal Area
1 Firing Range	2 Industrial Discharges
3 Landfills	1 Mixed Waste Area
2 Other	1 Pesticide Shop
1 Pistol Range	7 Spill Site Areas
4 Storage Areas	9 Surface Impoundment Lagoons
2 Underground Storage Tanks	1 Unexploded Munitions/Ordnance
6 Waste Treatment Plants	

***Most Widespread Contaminants of Concern:*** Explosives, Metals, Propellants, SVOCs, VOCs, Nitrates and Mustard Agent

***Media of Concern:*** Groundwater, Soil, Surface Water, Sediment

***Completed Removal (REM)/Interim Remedial Action (IRA)/Remedial Action (RA):***  
RVAAP-34, 44, 47, 51

***Total IRP Funding***

Prior Years (up to FY05):	\$40,401K
Current Year (FY06):	\$ 4,835K
Future Requirements (FY07+):	\$32,291K
Total	\$77,527K

***Duration of IRP***

Year of IRP Inception: 1989

Year of IRP RIP/RC: 2007/2037

Year of IRP Completion including Long-term Management (LTM): 2038

## IRP Contamination Assessment

The contamination at RVAAP originated from past industrial activities associated with the production and demilitarization of large caliber projectiles, general-purpose bombs, and parts for these munitions. RVAAP produced munitions during World War II and the Korean and Vietnam Wars. The industrial operations at RVAAP consisted of 12 production areas known as Load Lines. Load Lines 1 through 4 (melt-pour Lines) were the primary sources of secondary explosives contamination such as TNT, HMX and RDX, which were melted and poured into projectiles and bombs. Load Line 1 and 12 were used for demilitarization of projectiles. Load Line 1 was used to produce and recondition anti-tank mines. Workers would periodically use steam and hot water to hose down equipment and the floors and walls of buildings contaminated with explosive dust, spills, and vapors. The explosive-contaminated water from the cleaning, known as pink water, then drained out doorways and through floor drains onto the soils surrounding the buildings or was discharged into open ditches or ponds after being filtered through saw dust to remove suspended explosives. Waste explosives from the melt pour lines were routinely disposed of by open burning and detonation at other sites on the installation.

Load Lines 5 through 11 (fuze and booster) were used to manufacture fuzes, primers, and boosters while Load Line 12 housed the ammonium nitrate plant. Potential contaminants in Lines 5 through 11 include lead azide, mercury fulminate, lead styphnate, black powder, heavy metals, TNT, and Composition B. The amount of explosives used at the fuze and booster lines was much less than that used at the melt-pour lines because of the types of small munitions components being made there. Also, the operations did not create as much waste and were cleaner due to the special handling procedures needed when working with the highly shock and heat sensitive primary explosives. Load Line 12 produced ammonium nitrate for explosives, fertilizers and aluminum chloride. It also was periodically used for demilitarization projects involving the melt-out of TNT and other secondary explosives from the bombs and projectiles. As in the other melt pour lines, these activities resulted in pink water being released to the soils, ditches, and ponds in and around the line. Other types of contaminated sites associated with past industrial activities at RVAAP include landfills, testing facilities, dumps, burial sites, a pistol range, storage facilities, a scrap yard, and decontamination buildings. Although not present at every one of these sites, the contaminants of potential concerns include primary and secondary explosives, propellants, heavy metals, volatile and semi-volatile organics, PCBs and pesticides. Industrial activities ceased in 1992 when RVAAP was declared excess.

RVAAP started the IRP in 1989. Currently there are 30 active sites of which 10 of which are under performance-based contracts (PBCs). The sites were given a Relative Risk Site Evaluation (RRSE) rating of high, medium, or low based on the results of limited sampling in 1996 and 1998. Sampling of the soil, sediment, surface water, and groundwater at many of the high sites and some of the medium sites has been completed as part of the remedial investigation process during the past 7 years.

Well sampling conducted by Ohio EPA in 1997 and 1998 showed no off-post explosives contamination of residential wells.

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## IRP Contamination Assessment

A Phase I RI examined 11 high priority sites identified as RVAAP-04, 05, 08, 09, 10, 11, 12, 13, 18, 19, and 29. A final RI report was issued in 1997. The study concluded that Load Lines 1-4, and 12 appeared to be the most contaminated and contaminants were probably not migrating far from the sources in significant concentrations. The report recommended further study.

Results from more recent studies have for the most part confirmed initial beliefs that explosives and heavy metals are the most common contaminants and are generally located immediately around buildings in the load lines and in the ditches and ponds draining the sites. Less common contaminants include PCBs, SVOCs and propellants. These same contaminants have been detected in the water and sediment within the storm and sanitary sewers. On-post wells located to the southeast of Load Line 2 near the perimeter have shown trace amounts of explosives. Surface water and sediment samples indicate no significant levels of contaminants are migrating from the installation.

RI data are also available for some of the other sites used to support the main production activities. Limited data available from earlier efforts again show explosives and heavy metals to be the principle contaminants of potential concern at sites used to burn, dump, or bury explosive waste from the Load Lines. These contaminants are most frequently found in the soils at Winklepeck Burning Grounds, Open Demolition Area 2 and Erie Burning Grounds, and areas used to detonate and burn waste explosives. Erie Burning Grounds has in recent years existed as a shallow impoundment bordered with high quality wooded wetlands. Explosives, metals and some organics have been detected in the surface water and sediment at and downstream of the site.

### ***IRP Cleanup Exit Strategy***

The Army will complete restoration of the sites at RVAAP using PBCs. All high sites have been placed under contract as of March 2005. A PBC is scheduled to be awarded in the future to achieve RIP/RC at the remaining medium and low RRSE sites. Long-term management will be done on both a facility-wide and a site by site basis. No further action at all the sites will be achieved by ensuring there will be no unacceptable risk for the proposed future use by the OHARNG. (See Individual site Cleanup Strategies for details.)

### 1978

- USATHAMA: Installation Assessment of Ravenna Army Ammunition Plant. Report No. 132: November

### 1989

- Jacobs Engineering Group, Inc.: Ravenna Army Ammunition Plant RCRA Facility Assessment Draft RR/VSI Report: October
- USAEHA: Hazardous Waste Management Study No. 37-26-0442-84: Phase 2 of AMC Open Burning/Open Detonation Groundwater Evaluation: October

### 1995

Installation Action Plan RVAAP- FY 1995, Mason and Hanger Corp., 18-Jan

### 1996

- Facility-Wide Safety and Health Plan, SAIC, 1-Feb
- Preliminary Assessment for the Ravenna Army Ammunition Plant (RVAAP), SAIC, 1-Feb
- Preliminary Assessment for the Characterization of Areas of Contamination, SAIC, 12-Feb
- Installation Action Plan RVAAP- FY 1996, Mason and Hanger Corp., 4-Mar
- Action Plan for the Ravenna Army Ammunition Plant, SAIC, 7-Mar
- Facility-Wide Sampling and Analysis Plan for the Ravenna Army Ammunition Plant, SAIC, 1-Apr
- Phase 1 Remedial Investigation Site Safety and Health Plan Addendum for High Priority Areas of Concern for RVAAP, SAIC, 1-Jul
- Phase 1 Remedial Investigation Sampling and Analysis Plan Addendum for High Priority Areas of Concern for RVAAP, SAIC, 1-Jul
- Final Facility-Wide Sampling and Analysis Plan Amendment No., SAIC, 8-Jul
- Interim Measures Plan for the Open Detonation (OD) Grounds Hazardous Waste Treatment Unit, SAIC, 1-Aug
- Installation Restoration Program (IRP) Management Plan, USAEC, 6-Dec

### 1997

- USACE: Public Meeting Briefing - Phase I RI of High Priority sites at the RVAAP: September

### 1998

- Installation Action Plan RVAAP- FY 1998, Mason and Hanger Corp., 20-Feb-98
- Sampling and Analysis Plan Addendum for the Phase II Remedial Investigation of the Winklepeck Burning Grounds (AOC-05) and Determination of Facility-Wide Background at RVAAP, SAIC, 1-Apr-98
- Sampling and Analysis Plan Addendum for the Phase II Remedial Investigation of the Winklepeck Burning Grounds (AOC-05) and Determination of Facility-Wide Background at RVAAP, SAIC, 1-Apr-98

### 1998 (cont.)

- Site Safety and Health Plan Addendum for the Phase II Remedial Investigation of the Winklepeck Burning Grounds (AOC-05) and Determination of Facility -Wide Background at RVAAP, SAIC, 1-Apr-98
- Sampling and Analysis Plan Addendum for the Groundwater Investigation of the Former Ramsdell Quarry Landfill (AOC-01), SAIC, 1-Jun-98
- Site Safety and Health Plan Addendum for the Groundwater Investigation of the Former Ramsdell Quarry Landfill (AOC-01) at RVAAP, SAIC, 1-Jun-98
- USACE: Quality Control Plan for the phase II RI for Winklepeck Burning Grounds at RVAAP: January

### 1999

- Installation Action Plan RVAAP- FY 1999, Mark Patterson, 1-Mar-99
- Sampling and Analysis Plan Addendum No. 1 for the Phase I Remedial Investigation of the Erie Burning Grounds (AOC-02) at RVAAP, SAIC, 1-Jul-99
- Sampling and Analysis Plan Addendum No. 1 for the Phase II Remedial Investigation of Load Line 1 (AOC-08) at the Ravenna Army Ammunition Plant, SAIC, 1-Aug-99
- Site Safety and Health Plan Addendum No. 1 for the Phase II Remedial Investigation of Load Line 1 (AOC-08) at the Ravenna Army Ammunition Plant, SAIC, 1-Aug-99
- Environmental Information Management Needs Assessment at RVAAP, SAIC, 1-Sep-99
- Sampling and Analysis Plan Addendum No. 1 for the Phase I Remedial Investigation of Demolition Area 1 (RVAAP-03), SAIC, 1-Oct-99
- Site Safety and Health Plan Addendum No. 1 for the Phase I Remedial Investigation of Demolition Area #1 (AOC-03) at RVAAP, SAIC, 1-Oct-99
- Sampling and Analysis Plan Addendum No. 1 for the Phase 1 Remedial Investigation of the NACA Test Area (AOC-38) at the Ravenna Army Ammunition Plant, SAIC, 1-Oct-99
- Site Safety and Health Plan Addendum No. 1 for the Phase I Remedial Investigation of the NACA Test Area (AOC-38) at the Ravenna Army Ammunition Plant, SAIC, 1-Oct-99
- Scope of Work for the Interim Removal Action and Decontamination & Demolition of Building T-5301 (RVAAP-47), MKM Engineers, Inc., 1-Dec-99

### 2000

- Installation Action Plan RVAAP- FY 2000, USACE, 1-Mar-00
- Installation Action Plan RVAAP- FY 2001, USACE, 1-Mar-00
- Final Report on the Groundwater Investigation of the Ramsdell Quarry Landfill (AOC-01) at RVAAP, SAIC, 1-Aug-00
- Site Safety and Health Plan Addendum No. 1 for the Phase II Remedial Investigation of Load Line 1 (AOC-08) at the Ravenna Army Ammunition Plant, SAIC, 1-Aug-00
- Installation Action Plan RVAAP- FY 2001, USACE, 17-Aug-00
- Sampling and Analysis Plan Addendum No. 2 for the Phase II Remedial Investigation of Load Line 1 (AOC-08) at the Ravenna Army Ammunition Plant, SAIC, 1-Sep-00
- Sampling and Analysis Plan Addendum No. 1 for the Winklepeck Burning Grounds (AOC-05) Feasibility Study at RVAAP, SAIC, 1-Oct-00

### 2000 (cont.)

- Site Safety and Health Plan Addendum No. 1 for the Winklepeck Burning Grounds (AOC-05) Feasibility Study at RVAAP, SAIC, 1-Oct-00
- Installation Action Plan RVAAP- FY 2001, USACE, 1-Dec-00

### 2001

- Sampling and Analysis Plan Addendum for the Remedial Investigation of Load Line 11 (RVAAP-44) , MKM Engineers, Inc., 1-Jan-01
- Facility-Wide Sampling and Analysis Plan for Environmental Investigations, SAIC, 1-Mar-01
- Technical Memorandum Human Health and Ecological Risk Assessment Approach for the Load Line 1 (AOC-08) and Load Line 12 (AOC-12) Phase II Remedial Investigations at RVAAP, SAIC, 1-Mar-01
- Summary and Technical Assumptions for Area, Volume, and Cost Estimations for the Winklepeck Burning Grounds (AOC-05) Strategic Plan Ravenna Army Ammunition Plant, SAIC, 1-Mar-01
- Phase II Remedial Investigation Report for the Winklepeck Burning Ground (AOC-05) at RVAAP, SAIC, 1-Apr-01
- Final Sampling & Analysis Plan Addendum for the Remedial Landfill Design/Removal Action at the Sand Creek Disposal Road Landfill (AOC-34), MKM Engineers, Inc., 1-Apr-01
- Final Site-specific Safety and Health Plan for the Remedial Design/Removal Action at the Sand Creek Disposal Road Landfill (AOC-34), MKM Engineers, Inc., 1-Apr-01
- Final Workplan for the Remedial Design/Removal Action at Sand Creek Disposal Road Landfill (AOC-34), MKM Engineers, Inc., 1-Apr-01
- Final Sampling & Analysis Plan Addendum for the Remedial Design/Removal Action at the Paris-Windham Road Dump (AOC-51), MKM Engineers, Inc., 1-Apr-01
- Final Site-Specific Safety and Health Plan for the Remedial Design/Removal Action at the Paris Windham Road Dump (AOC-51), MKM Engineers, Inc., 1-Apr-01
- Final Work Plan for the Remedial Design/Removal Action at the Paris-Windham Road Dump (AOC-51), MKM Engineers, Inc., 1-Apr-01
- Final Sampling and Analysis Plan Addendum for the Phase II Remedial Investigation at the Upper and Lower Cobbs Pond (AOC-29), MKM Engineers, Inc., 1-Jul-01
- Final Site-Specific Safety and Health Plan for the Phase II Remedial Investigation at the Upper and Lower Cobbs Pond (AOC-29), MKM Engineers, Inc., 1-Jul-01
- Final Work Plan for the Phase II Remedial Investigation at the Upper and Lower Cobbs Pond (AOC 29), MKM Engineers, Inc., 1-Jul-01
- Final Site-Specific Safety and Health Plan for the Remedial Investigation at Central Burn Pits (AOC-49) at the Ravenna, MKM Engineers, Inc., 1-Aug-01
- Final Work Plan for the Remedial Investigation at Central Burn Pits (AOC-49) at the Ravenna Army Ammunition Plant, MKM Engineers, Inc., 1-Aug-01
- Groundwater Assessment Plan for the Ramsdell Quarry Landfill (AOC-01), MKM Engineers, Inc., 1-Sep-01
- Geophysical Survey Results Suspected Mustard Agent Burial Site RVAAP, SAIC, 1-Oct-01

### 2001 (cont.)

- Phase I Remedial Investigation Report for the Erie Burning Grounds (AOC-02) at RVAAP, SAIC, 1-Dec-01
- Phase I Remedial Investigation Report for the Demolition Area #1 (AOC-03) at RVAAP, SAIC, 1-Dec-01
- Final Work Plan for the Remedial Design/Removal Action at the Sand Creek Disposal Road Landfill (AOC-34), SAIC, 1-Dec-01
- Phase 1 Remedial Investigation Report for NACA Test Area (AOC-38) at the Ravenna Army Ammunition Plant, SAIC, 1-Dec-01

### 2002

- Installation Action Plan RVAAP- FY 2002, Mark Patterson, 1-Feb-02
- Sampling and Analysis Plan Addendum No. 3 for the Biological Measurements at Winklepeck Burning Grounds (AOC-05) at the Ravenna Army Ammunition Plant, SAIC, 1-May-02
- Work Plan and Sampling and Analysis Plan Addenda for the Phase II Remedial Investigation of Demolition Area 2, SPECPRO, 1-Jun-02
- Work Plan and Sampling and Analysis Plan Addenda for the Phase II Remedial Investigation of Demolition Area 2, SPECPRO, 1-Jun-02
- Investigation-Derived Waste Characterization and Disposal Plan, SpecPro, 1-Nov-02
- Installation Action Plan RVAAP- FY 2003, Mark Patterson, 1-Dec-02
- Phase II Remedial Investigation Report for the Load Line 1 (RVAAP-08) at RVAAP, SAIC, 1-Dec-02
- Groundwater Monitoring Well Installation and Groundwater Sampling at the Suspected Mustard Agent Burial Site (RVAAP-28), SpecPro, 20-Dec-02

### 2003

- Final Compliance Monitoring Program for the Open Demolition Area #2 (RVAAP-04), MKM Engineers, Inc., 9-Jan-03
- Report on the Biological Field-Truthing Effort at Winklepeck Burning Grounds (AOC-05), SAIC, 1-Mar-03
- RVAAP Applied Dried Paints at Load Lines 6 (AOC-33) and 9 (AOC-42) GCMS PCB Results, MKM Engineers, Inc., 18-Apr-03
- RVAAP Facility Wide Ecological Risk Work Plan, USACE, 21-Apr-03
- Phase II Remedial Investigation Report for the Load Line 1 (RVAAP-08) at RVAAP, SAIC, 1-May-03
- Installation Action Plan RVAAP- FY 2004, Mark Patterson, 1-Jun-03
- Phase II Remedial Investigation Report for the Load Line 1 (RVAAP-08) at RVAAP, SAIC, 1-Jun-03
- Phase II Remedial Investigation Report for the Load Line 1 (RVAAP-08) at RVAAP, SAIC, 1-Jun-03
- Safety and Health Plan for the Remedial Investigation of Load Lines 6 (RVAAP-33) and 9 (RVAAP-42), MKM Engineers, Inc., 1-Jul-03
- Community Relations Plan, USACE, 1-Sep-03
- Safety and Health Plan for the Remedial Investigation of Load Lines 6 (RVAAP-33) and 9 (RVAAP-42), MKM Engineers, Inc., 1-Sep-03

### 2003 (cont.)

- Sampling and Analysis Plan Addendum for the Remedial Investigation of Load Line #6 (RVAAP-33), MKM Engineers, Inc., 1-Sep-03
- Sampling and Analysis Plan Addendum for the Remedial Investigation of Load Line #9 (RVAAP-42), MKM Engineers, Inc., 1-Sep-03
- Sampling and Analysis Plan Addendum No. 1 for the Phase I Remedial Investigation of Ramsdell Quarry Landfill (AOC-01) at RVAAP, SAIC, 1-Oct-03
- Site Safety and Health Plan Addendum No. 1 for the Phase I Remedial Investigation of Ramsdell Quarry Landfill, SAIC, 1-Oct-03
- Sampling and Analysis Plan Addendum No 1 for the Phase II Remedial Investigation of the Erie Burning Grounds (RVAAP-02), SAIC, 1-Oct-03
- Sampling and Analysis Plan Addendum No. 1 for the Phase II Remedial Investigation of the Erie Burning Grounds (AOC-02) at RVAAP, SAIC, 1-Oct-03
- Final Work Plan and Sampling and Analysis Plan Addenda for the Phase I/Phase II Remedial Investigation of the Fuze and Booster Quarry Landfill/Ponds at RVAAP, SpecPro, 1-Oct-03
- Sand Creek Dump (AOC-34) Cleanup Project Weekly Reports August - October 2003, MKM Engineers, Inc., 1-Oct-03
- Paris-Windham Dump (AOC-51) Clean Up Project Weekly Reports, Photos, Misc Data April-October 2003, MKM Engineers, Inc., 1-Oct-03
- Decon-Demo Load Lines 6 (AOC-33) and 9 (AOC-42) Misc Corres, Reports, Photos at RVAAP, Unknown, 1-Dec-03

### 2004

- OE/UXO Removal & Interim Removal Action Report For The Open Demolition Area #1 (RVAAP-03), MKM Engineers, Inc., 1-Mar-04
- Remedial Design/Removal Action Plan for Sand Creek Dump (AOC-34), MKM Engineers, Inc., 1-Mar-04
- Final Report Interim Removal Action at Load Line 11 (AOC-44), MKM Engineers, Inc., 1-Mar-04
- Interim Removal Action Report for Load Line #11 (AOC-44) Vol 1 Main Text - Appendices A-G, MKM Engineers, Inc., 1-Mar-04
- Interim Removal Action Report for Load Line #11 (AOC-44) Vol 2 Appendices H-I, MKM Engineers, Inc., 1-Mar-04
- Final Report for Remedial Design/Removal Action at Paris-Windham Road Dump (AOC-51) at Ravenna Army Ammunition Plant, MKM Engineers, Inc., 1-Mar-04
- Installation Action Plan RVAAP- FY 2005, Mark Patterson, 1-May-04
- Facility-Wide Biological and Water Quality Study 2003, USACE, 1-Jun-04
- Supplemental Baseline Human Health Risk Assessment, Shaw/SAIC, 1-Jul-04
- Phase II Remedial Investigation Report for the Load Line 2 (AOC-09) at the Ravenna Army Ammunition Plant, Volume 1 - Main Text, Shaw/SAIC, 1-Jul-04
- Phase II Remedial Investigation Report for Load Line 3 (AOC-10) at the Ravenna Army Ammunition Plant Volume 1 - Main Text, Shaw/SAIC, 1-Jul-04
- Phase II Remedial Investigation Report for Load Line 3 (AOC-10) at the Ravenna Army Ammunition Plant Volume 2 - Appendices A-S, Shaw/SAIC, 1-Jul-04

### 2004 (cont.)

- Work Plan for the Phase I MEC Density Survey of Winklepeck Burning Grounds (AOC-05), USATCES/MK, 1-Aug-04
- Facility-Wide Groundwater Monitoring Program Plan, Portage, 1-Sep-04
- Proposed Remedial Goal Options for Soil at Load Lines 1 (AOC-08), 2 (AOC-09), 3 (AOC-10), and 4 (AOC-11) at RVAAP, Shaw, 1-Sep-04
- Phase II Remedial Investigation Report for Load Line 4 (AOC-11) at the Ravenna Army Ammunition Plant Volume 1 - Main Text, Shaw/SAIC, 1-Sep-04
- Phase II Remedial Investigation Report for Load Line 4 (AOC-11) at the Ravenna Army Ammunition Plant Volume 2 - Appendices A-S, Shaw/SAIC, 1-Sep-04
- Sampling and Analysis Plan for the Data Gap Analysis and Additional Sampling and Security, Emergency Response and Contingency Plan and Safety, Health and Emergency Response Plan for the Remediation of Soils at Load Lines 1 (AOC-08), 2 (AOC-09), 3 (AOC-10), and 4 (AOC-11) at RVAAP, Shaw, 1-Oct-04
- Final Sampling and Analysis Plan Addendum for the Characterization of 14 RVAAP AOCs at RVAAP, MKM Engineers, Inc., 1-Oct-04
- Sampling and Analysis Plan for the Data Gap Analysis and Additional Sampling in Support of the Remediation of Soils at Load Lines 1 (AOC-08), 2 (AOC-09), 3 (AOC-10), and 4 (AOC-11) at RVAAP, Shaw, 1-Oct-04
- Final Site Safety and Health Plan Addendum for the Characterization of 14 RVAAP AOCs, MKM Engineers, Inc., 1-Oct-04

### 2005

- Final November 2004 Sampling Completion Report for Load Lines 1 - 4, Shaw, 1-Feb-05
- Focused Feasibility Study for the Winklepeck Burning Grounds (AOC-05) at RVAAP, SAIC, 1-Feb-05
- Phase I MEC Density Survey After Action Report At Winklepeck Burning Grounds (AOC-05), MKM Engineers, Inc., 1-Mar-05
- Phase III Remedial Investigation Report for the Winklepeck Burning Grounds (AOC-05) at RVAAP, SAIC, 1-Mar-05
- Phase III Remedial Investigation Report for the Winklepeck Burning Grounds (AOC-05) at RVAAP, USACE, 1-Mar-05
- Final Work Plan for Phase II MEC Clearance and Munitions Response at Winklepeck Burning Grounds (AOC-05), MKM Engineers, Inc., 1-Mar-05
- Final Site Safety and Health Plan for the Phase II MEC Clearance and Munitions Response at Winklepeck Burning Grounds (AOC-05), MKM Engineers, Inc., 2-Mar-05
- Winklepeck Burning Grounds AutoCAD Figures for Phase I After Action Report, MKM Engineers, Inc., 2-Mar-05
- Focused Feasibility Study for the Remediation of Soils at Load Lines 1 through 4 (AOC-08) (AOC-09) (AOC-10) (AOC-11) at the RVAAP, Shaw, 1-May-05
- Final Focused Feasibility Study for the Remediation of Soils at LLs 1-4, RVAAP, Shaw, 1-May-05
- Focused Feasibility Study for the Remediation of Soils at Load Lines 1 through 4 (AOC-08) (AOC-09) (AOC-10) (AOC-11) at the RVAAP, Shaw, 1-May-05

### 2005 (cont.)

- Phase I Remedial Investigation December 2004 Follow-On Groundwater Sampling at the Ramsdell Quarry Landfill (AOC-01), SAIC, 15-Jun-05
- Final Proposed Plan for the Remediation of Soils at LL1-4 (RVAAP-08, RVAAP-09, RVAAP-10, RVAAP-11), Shaw, 1-Jul-05
- Final Report on the Groundwater Monitoring Well Installation and Groundwater Sampling at the Suspected Mustard Agent Burial Site (RVAAP AOC-28) - Main Report and Appendices A-H, SpecPro, 1-Jul-05
- Final Report on the Groundwater Monitoring Well Installation and Groundwater Sampling at the Suspected Mustard Agent Burial Site (RVAAP AOC-28), SpecPro, 1-Jul-05
- Installation Action Plan RVAAP- FY 2006-Non Public Version, Mark Patterson, 14-Jul-05
- Proposed Plan for the Remediation of Soils at LL1-4 (RVAAP-08, RVAAP-09, RVAAP-10, RVAAP-11), Shaw, 14-Jul-05
- Final Report on the Groundwater Monitoring Well Installation and Groundwater Sampling at the Suspected Mustard Agent Burial Site (RVAAP AOC-28), SpecPro, 21-Jul-05
- Report on the Groundwater Monitoring Well Installation and Groundwater Sampling at the Suspected Mustard Agent Burial Site (RVAAP AOC-28), SpecPro, 21-Jul-05
- Final Report Facility Wide Groundwater Monitoring Program April 2005 Sampling Event Report - Main Report and Appendices A-D, SpecPro, 1-Aug-05
- Final Report Facility Wide Groundwater Monitoring Program Sampling Event Report - Main Report and Appendices A-D, SpecPro, 1-Aug-05
- Site Safety and Health Plan for the Phase I MEC Density Survey of Winklepeck Burning Grounds (AOC-05), MKM Engineers, Inc., 11-Aug-05
- Final Facility Wide Groundwater Monitoring Program Report on the July 2005 Sampling Event -Vol 1- Main Report, SpecPro Inc., 29-Aug-05
- Final Facility Wide Groundwater Monitoring Program Report on the July 2005 Sampling Event-Vol 2-Appendices A-C, SpecPro, Inc., 29-Aug-05
- RVAAP/Ohio EPA Cooperative Agreement (CA) Work Plans, Various, 31-Aug-05
- Installation Action Plan RVAAP- FY 2006, Mark Patterson, 1-Sep-05
- Final Work Plan Containing Addendums(SAP,QAPP,SSH,UXO) for Groundwater Monitoring Well Installation and Groundwater Sampling at the Suspected Mustard Agent Burial Site (AOC-28), SpecPro, 1-Sep-05
- Final Remedial Investigation Report Central Burn Pits (RVAAP-49), SAIC/MKM, 1-Sep-05
- Final for the Remedial Investigation at Load Line 11 (AOC-44), MKM Engineers, Inc., 9-Sep-05
- Final for the Remedial Investigation at Load Line 11 (AOC-44) VOL 2, MKM Engineers, Inc., 9-Sep-05
- Final for the Remedial Investigation at Load Line 11 (AOC-44) VOL 3, MKM Engineers, Inc., 9-Sep-05
- Final for the Remedial Investigation at Load Line 11 (AOC-44) VOL 4, MKM Engineers, Inc., 9-Sep-05

### 2005 (cont.)

- Final for the Remedial Investigation at Load Line 11 (AOC-44) VOL 5, MKM Engineers, Inc., 9-Sep-05
- Final for the Remedial Investigation at Load Line 11 (AOC-44) VOL 1, MKM Engineers, Inc., 9-Sep-05
- Final for the Remedial Investigation at Load Line 11 (AOC-44) VOL 2, MKM Engineers, Inc., 9-Sep-05
- Phase I Remedial Investigation Report for the Ramsdell Quarry Landfill at RVAAP, SAIC, 16-Sep-05
- Phase I Remedial Investigation Report for the Ramsdell Quarry Landfill (AOC-01) at RVAAP, SAIC, 16-Sep-05
- Final for the Phase II Remedial Investigation at the Upper and Lower Cobbs Pond (AOC 29) Vol 1, MKM Engineers, Inc., 20-Sep-05
- Final for the Phase II Remedial Investigation at the Upper and Lower Cobbs Pond (AOC 29) Vol 2, MKM Engineers, Inc., 20-Sep-05
- Final for the Phase II Remedial Investigation at the Upper and Lower Cobbs Pond (AOC 29) Vol 3, MKM Engineers, Inc., 20-Sep-05
- Final Phase II Remedial Investigation Report for the Erie Burning Grounds (AOC-02) at RVAAP, SAIC, 26-Sep-05
- Final Phase II Remedial Investigation Report for the Open Demolition Area #2 (AOC-4) Vol 2, SpecPro/SAIC, 29-Sep-05
- Final Proposed Plan for the Winklepeck Burning Grounds, SAIC, 6-Oct-05
- Facility-Wide Biological and Water Quality Study 2003, Part 1-Streams, Part 2-Ponds, USACE, 1-Nov-05
- Final Phase II Remedial Investigation Supplemental Report for Load Line 12 (AOC-12), SAIC, 1-Nov-05
- Final Phase II Remedial Investigation Supplemental Report for Load Line 12 at RVAAP, SAIC, 7-Nov-05
- Final Sampling and Analysis Plan Addendum No. 1 Supplemental Phase II Remedial Investigations (RVAAP-04) ODA#2, (RVAAP-16) F&BQL/P, and (RVAAP-49) CBPs, SAIC, 14-Nov-05
- Final Report Phase I/II Remedial Investigation of the Fuze & Booster Quarry Landfill/Ponds (RVAAP-16) Volume One - Main Report, SpecPro/SAIC, 18-Nov-05
- Final Report Phase I/II Remedial Investigation of the Fuze & Booster Quarry Landfill/Ponds (RVAAP-16) Volume Two - Appendices A-K, SpecPro/SAIC, 18-Nov-05
- Final Facility Wide Groundwater Monitoring Program Report on the July 2005 Sampling Event-Main Report and Appendices A-C, SpecPro, 22-Nov-05
- Final Proposed Plan for the Winklepeck Burning Grounds, SAIC, 2-Dec-05
- Phase II MEC Clearance and Munitions Response at Winklepeck Burning Grounds (AOC-05), MKM Engineers, Inc., 16-Dec-05
- Phase II MEC Clearance and Munitions Response at Winklepeck Burning Grounds (AOC-05), MKM Engineers, Inc., 16-Dec-05

### 2006

- Sampling and Analysis Plan Addendum No. 2 for the Winklepeck Burning Grounds Feasibility Study at RVAAP, SAIC, 13-Feb-06

# RAVENNA ARMY AMMUNITION PLANT

## Installation Restoration Program Site Descriptions

## PBC AT RAVENNA PBC (2003 AND 2005)

### SITE DESCRIPTION

This site was created to track the funding for the PBC at Ravenna AAP. In FY03, a PBC was awarded to Shaw Environmental for sites RVAAP-08, -09, -10 and -11. In FY05, a second PBC was awarded to SAIC for sites RVAAP-01, -02, -04, -12, -16, and -49.

### CLEANUP STRATEGY

See the following individual site cleanup strategies.

### STATUS

**REGULATORY DRIVER:** CERCLA

**RRSE:** Medium

**CONTAMINANTS OF CONCERN:**  
Metals

**MEDIA OF CONCERN:**  
Groundwater

Phases	Start	End
PA.....	200308 .....	200308
RA(C) .....	200310 .....	200701
LTM .....	200710 .....	201210

**RC: 200701**

# RVAAP-01 RAMSDELL QUARRY LANDFILL

## SITE DESCRIPTION

The Ramsdell Quarry Landfill is an unlined, 10-acre landfill in the bottom of an abandoned quarry. Water is ponded in the northern end of the quarry. During the period 1946 to 1950, the site was used to burn explosives and napalm bombs. No historical information has been located for the period of 1950-1976. From 1976 to 1990, the site was used strictly as a non-hazardous solid waste landfill. A portion of the site was permitted as a sanitary landfill by the state of Ohio from 1978 until its closure in 1990. The landfill cover is regulated under RCRA while the remaining portion of the site is regulated under CERCLA.

Because this unit is unlined, there is potential for releases from the landfill to surrounding soils and groundwater. Five groundwater monitoring wells were installed around the landfill perimeter in 1988. The wells are monitored on a regular basis as part of the facility-wide groundwater monitoring program. New wells were installed in 1998 to further investigate the nature and extent of groundwater contamination at the landfill. A report of findings was published in October 1998. Low levels of explosives and metals have been detected in groundwater.

Additional wells were installed and soil, sediment and surface water samples were taken in fall 2003 to further determine the nature and extent of the contamination of the CERCLA portion of the quarry. A final RI was approved and a FS is underway. The groundwater unit was transferred from RCRA solid waste program to CERCLA in February 2005. This is one of the six sites in the FY05 PBC.

## CLEANUP STRATEGY

This site will be transferred to NGB in FY07 when it is response complete. Groundwater monitoring will continue until 2020 in accordance with the Ohio post-closure requirements. Cap maintenance will continue until 2020 (OMA funded). Future use by the OHARNG will be restricted access - no digging. LTM consisting of land use controls, annual inspection of signs and stakes will continue indefinitely.

## STATUS

**REGULATORY DRIVER:** CERCLA

**RRSE:** High

**CONTAMINANTS OF CONCERN:**  
SVOCs, Explosives, Metals

**MEDIA OF CONCERN:** Soil,  
Groundwater

Phases	Start	End
PA .....	198802 .....	198804
SI .....	198906 .....	198906
RI/FS.....	200306 .....	200611
RD .....	200506 .....	200611
RA(C).....	200506.....	200709
LTM.....	200710 .....	202109

**RC: 200709**

# RVAAP-02

## ERIE BURNING GROUNDS

### SITE DESCRIPTION

This 35-acre site was used for open burning on the ground surface during the late 1940s and early 50s. This site is composed primarily of wetlands. Bulk, obsolete, off-spec propellants, conventional explosives, rags, and large explosive-contaminated items were burned at this location. The ash residue from burning activities was left at the site. MEC is present at the site and will be addressed under the MMRP site RVAAP-002-R-01. IRP constituents of concern at this location include explosives, SVOCs, and heavy metals. There is a potential for release of contaminants from this unit to the surrounding soils, surface water/sediment and groundwater.

The site was transferred to the NGB in May 1999. An RI was completed in 2005 and an FS is underway. This is one of the six sites in the FY05

### CLEANUP STRATEGY

The site will be response complete by September 2007. Long-term management will follow. Future use by the OHARNG will be restricted access with no digging. Land use controls will be needed. Currently this area is used for permitted wetlands access for waterfowl hunting and trapping. Future OHARNG land uses include using water for fire suppression, dust control, trapping and fishing.

### STATUS

**REGULATORY DRIVER:** CERCLA

**RRSE:** High

**CONTAMINANTS OF CONCERN:**  
Explosives, Metals, SVOCs

**MEDIA OF CONCERN:** Soil,  
Groundwater, Surface Water,  
Sediment

Phases	Start	End
PA.....	198802 .....	198804
SI .....	198906 .....	198906
RI/FS .....	199810 .....	200611
RD .....	200506 .....	200611
RA.....	200506 .....	200709
LTM .....	200710 .....	201309

**RC: 200709**

# RVAAP-04

## OPEN DEMOLITION AREA #2

### SITE DESCRIPTION

This site was used since 1948 to destroy large caliber munitions and off-specification bulk explosives that could not be deactivated or demilitarized by any other means due to their condition. Detonation was performed in a pit with a minimum depth of 4 feet. After detonation, metal parts were collected and removed from the site. The CERCLA (IRP) portion of the site is approximately 25 acres in size. Contaminants of concern at this site are explosives and metals. Sand Creek bisects the site.

The RI was completed in 2005 and the FS is underway. This is one of the six sites in the FY05 PBC.

There is a smaller 1.5 acre area regulated under RCRA on the north side of Sand Creek, which was regularly used until 1992 for demolition activities. This area is not eligible for ER,A funding and is being managed under BRAC-OMA. Four groundwater monitoring wells are currently sampled on a quarterly basis. Low levels of explosives have been periodically detected in RCRA wells within this site. OMA funding was used in 1999 and 2000 to remove MEC to a depth of 4 ft in the area of the 1.5-acre RCRA unit.

The MEC portion (the proposed fence and the Rocket Ridge area) of this site is eligible for the Military Munitions Response Program (MMRP- RVAAP-004-R-01).

### CLEANUP STRATEGY

This site is anticipated to be transferred to NGB in FY09+. The site will be response complete by September 2007. Long-term management will follow. Future OHARNG use will be restricted access with no digging.

Short-term land use controls will be addressed under this site and long-term LUCs will be addressed under MMRP site RVAAP-004-R-01.

When no longer in use, the 1.5 acre RCRA unit will be closed under RCRA or other applicable laws.

### STATUS

**REGULATORY DRIVER:** CERCLA

**RRSE:** High

**CONTAMINANTS OF CONCERN:**  
Explosives, Metals

**MEDIA OF CONCERN:** Soil,  
Groundwater, Surface Water,  
Sediment

Phases	Start	End
PA .....	198802 .....	198804
SI .....	198906 .....	198906
RI/FS .....	200109 .....	200611
RD .....	200506 .....	200611
RA .....	200506 .....	200709
LTM .....	200710 .....	201309

**RC: 200709**

# RVAAP-05

## WINKLEPECK BURNING GROUNDS

### SITE DESCRIPTION

The Winklepeck burning grounds consists of approximately 200 acres and was in operation from 1948 to 1998. Prior to 1980, open burning was carried out in pits, pads, and sometimes on the roads within the 200-acre area. Burning was conducted on the bare ground and the ash was abandoned at the site. Prior to 1980, RDX, antimony sulfide, Composition B, lead azide, TNT, propellants, black powder, waste oils, sludge from the load lines, domestic wastes and small amounts of laboratory chemicals were burned. Munitions and explosive constituents (primarily scrap metal) are present at the site. From 1980-98, burning of scrap explosives, propellants and explosive-contaminated materials was conducted in raised, refractory-lined trays within a 1.5-acre area.

The Army notified Ohio EPA of the intent to withdraw the Part B permit application in 1994.

The burn trays along with the 90-day storage unit, Building 1601, were closed in accordance with Ohio EPA guidance in 1998.

The deactivation furnace soils were transferred to this AOC for study and investigation by the Director's Final Findings & Orders, June 2004. Groundwater monitoring will be handled under the Facility-wide Groundwater Monitoring Program.

The RI/FS is complete. The proposed plan was presented in 2005 and the ROD is in preparation.

Approximately 180 acres were transferred to the NGB in 2005 for the construction of a Mark 19 grenade machine gun range. The remaining 20 acres contains two burn pad locations that will be remediated prior to transfer.

### CLEANUP STRATEGY

Explosive contamination has been found in some monitoring wells and will require continued monitoring for five years under the facility-wide groundwater monitoring program.

The future land use is a Mark 19 (grenade machine gun) Range. Additional soil removal is required in FY06.

### STATUS

**REGULATORY DRIVER:** CERCLA

**RRSE:** High

**CONTAMINANTS OF CONCERN:**  
Explosives, Metals, SVOCs

**MEDIA OF CONCERN:** Soil,  
Groundwater

Phases	Start	End
PA.....	198802 .....	198804
SI .....	198906 .....	198906
RI/FS .....	199410 .....	200609
RD .....	200610 .....	200612
RA(C).....	200608 .....	200701
LTM .....	200810 .....	201409

**RC: 200701**

# RVAAP-06 C BLOCK QUARRY

## SITE DESCRIPTION

This site is an abandoned quarry approximately 0.3 acres in size. The site was used as a disposal area for annealing process wastes (chromic acid) for a short time during the 1950s. Liquid wastes were apparently dumped on the ground in the pit bottom. The site is now heavily forested with trees of one foot diameter or larger. IRP constituents of concern include metals, SVOCs, VOCs and propellants.

This site was transferred to NGB in May 1999.

## CLEANUP STRATEGY

A preliminary draft characterization report has been completed. This report will be used to procure a future PBC for this site. This PBC will take this site to RIP/RC. Soil removal, followed by groundwater sampling, is anticipated. Future use of the site is restricted access with no digging.

## STATUS

**REGULATORY DRIVER:** CERCLA

**RRSE:** Low

**CONTAMINANTS OF CONCERN:**  
Metals, SVOCs, VOCs

**MEDIA OF CONCERN:** Soil,  
Sediment, Surface Water,  
Groundwater

Phases	Start	End
PA .....	198802 .....	198804
SI .....	198906 .....	198906
RI/FS .....	200408 .....	200907
RD .....	200905 .....	200911
RA(C) .....	200911 .....	201108
LTM .....	201110 .....	201611

**RC: 201108**

# LOAD LINE 1 (PAGE 1 OF 2)

## SITE DESCRIPTION

Load Line 1 was used between 1941 and 1971 to melt and load TNT and Composition B into large-caliber projectiles. It was also used for the demilitarization of projectiles and to produce and recondition anti-tank mines. Workers would periodically use steam and hot water to hose down equipment and the floors and walls of buildings contaminated with explosive dust, spills, and vapors. Wash-down water and wastewater from the load line operations were collected in concrete sumps, pumped through sawdust filtration units and then discharged to a settling pond. Building wash-down water from the melt-pour buildings was also swept out through doorways onto the ground surrounding the buildings. The settling pond was an unlined earthen impoundment approximately 1 acre in size. Water from the impoundment was discharged to a surface stream that exited the installation. This area was also used as a demilitarization area. Contaminants of concern at this site are explosive compounds, SVOCs and heavy metals. The media of concern include soils, surface water, sediment and groundwater. Most above ground structures were demolished during 2000. Environmental controls were used during the demolition activities to prevent migration of contaminants to the environment.

A PBC was awarded to Shaw Environmental in September 2003 to complete an interim soil and sediment removal action at Load Lines 1, 2, 3 and 4. The RI/FS and PP are complete and the ROD is underway.

## CLEANUP STRATEGY

This site is anticipated to be transferred to NGB in FY08.

Final: All concrete foundations and walkways may be removed. Sewage and drainage infrastructure will be addressed as needed with BRAC funding.

The PBC project will result in an interim remedy with five years of long-term management. Additional investigations and possible remediation of the soils under the inaccessible portions of the buildings will be needed when concrete foundations are removed.

## STATUS

**REGULATORY DRIVER:** CERCLA

**RRSE:** High

**CONTAMINANTS OF CONCERN:**  
Explosives, Metals, SVOCs

**MEDIA OF CONCERN:** Soil,  
Groundwater, Surface Water,  
Sediment

Phases	Start	End
PA.....	198802 .....	198804
SI .....	198906 .....	198906
RI/FS .....	199410 .....	200608
RD .....	200406 .....	200610
RA(C).....	200406 .....	200709

**RC: 200709**

## **RVAAP-08**

### **LOAD LINE 1** (PAGE 2 OF 2)

Future land use by the OHARNG will involve armored vehicle maneuvering, with no digging. Soils may be disturbed to a depth of four feet. Currently, part of this area, known as Criggy's Pond, is used for permitted wetlands access for waterfowl hunting and

## LOAD LINE 2 (PAGE 1 OF 2)

### SITE DESCRIPTION

Load Line 2 was used between 1941 and 1971 to melt and load TNT and Composition B into large-caliber projectiles. Building wash-down water and wastewater from the load line operations were collected in concrete sumps, pumped through sawdust filtration units and then discharged to a settling pond. Building wash-down water from the melt-pour buildings was also swept out through doorways onto the ground surrounding the buildings. The settling pond was an unlined triangular-shaped pond approximately 2 acres in size and 6 to 8 ft deep. Water from the impoundment was discharged to a surface stream that exited the installation. Contaminants of concern at this site are explosive compounds, VOCs, SVOCs and heavy metals.

A PBC was awarded to Shaw Environmental in September 2003 to complete an interim soil and sediment removal action at the Load Lines 1, 2, 3 and 4. The RI/FS and PP are complete and the ROD is underway.

### CLEANUP STRATEGY

This site is anticipated to be transferred to NGB in FY08.

All foundations and footings will be removed (with BRAC funding). Sewage and drainage infrastructure will be addressed as needed.

The PBC project will result in an interim remedy with five years of long-term management. Additional investigations and possible remediation of the soils under the inaccessible portions of the buildings will be needed when concrete walls and foundations are removed.

Future land use by the OHARNG will involve armored vehicle maneuvering, with no digging. Soils may be disturbed to a depth of four feet.

Currently, part of this area, known as Kelly's Pond, is used for permitted wetlands access for waterfowl hunting and trapping. Future OHARNG uses include using water for fire suppression, dust control, trapping and fishing.

### STATUS

**REGULATORY DRIVER:** CERCLA

**RRSE:** High

**CONTAMINANTS OF CONCERN:**  
Explosives, Metals, SVOCs, VOCs

**MEDIA OF CONCERN:** Soil,  
Groundwater, Surface Water,  
Sediment

Phases	Start	End
PA.....	198802 .....	198804
SI .....	198906 .....	198906
RI/FS .....	200010 .....	200608
RD .....	200406 .....	200610
RA(C) .....	200406 .....	200709

**RC: 200709**

## **RVAAP-09**

### **LOAD LINE 2 (PAGE 2 OF 2)**

Some explosively contaminated buildings (Buildings DB-4 and DB-4A) are expected to require removal of explosive residue using technology approved by USATCES and DDESB. All hazardous materials have been removed from the buildings. PCB paint issues remain. These demolition activities require coordination with the PBC soil removal activities.

# RVAAP-10

## LOAD LINE 3

### SITE DESCRIPTION

Load Line 3 was used between 1941 and 1971 to melt and load TNT and Composition B into large-caliber projectiles. Building wash-down water and wastewater from the load line operations were collected in concrete sumps, pumped through sawdust filtration units and then discharged to a drainage ditch leading to a settling pond. Building wash-down water from the melt-pour buildings was also swept out through doorways onto the ground surrounding the buildings. Contaminants of concern at this site are explosive compounds, VOCs, SVOCs and metals. Media of concern include soils, surface water, sediment and groundwater.

A PBC was awarded to Shaw Environmental in September 2003 to complete an interim soil and sediment removal action at Load Lines 1, 2, 3 and 4. The RI/FS and PP are complete and the ROD is underway.

### CLEANUP STRATEGY

This site is anticipated to be transferred to NGB in FY08.

All foundations and footings will be removed (with BRAC funding). Sewage and drainage infrastructure will be addressed as needed.

The PBC project will result in an interim remedy with five years of long-term management. Additional investigations and possible remediation of the soils under the inaccessible portions of the buildings will be needed when concrete walls and foundations are removed.

Future land use by the OHARNG will involve armored vehicle maneuvering, with no digging. Soils may be disturbed to a depth of four feet.

Some explosively contaminated buildings (Buildings EB-4 and EB-4A) are expected to require removal of explosive residue using technology approved by USATCES and DDESB. All hazardous materials have been removed from the buildings. PCB paint issues remain. These demolition activities require coordination with the PBC soil removal activities.

### STATUS

**REGULATORY DRIVER:** CERCLA

**RRSE:** High

**CONTAMINANTS OF CONCERN:**  
Explosives, Metals, SVOCs, VOCs

**MEDIA OF CONCERN:** Soil,  
Groundwater, Surface Water,  
Sediment

Phases	Start	End
PA .....	198802 .....	198804
SI .....	198906 .....	198906
RI/FS.....	200010 .....	200608
RD.....	200406 .....	200610
RA(C).....	200406 .....	200709

**RC: 200709**

## LOAD LINE 4 (PAGE 1 OF 2)

### SITE DESCRIPTION

Load Line 4 was used between 1941 and 1971 to melt and load TNT and Composition B into large-caliber projectiles. Building wash-down water and wastewater from the load line operations were collected in concrete sumps, pumped through sawdust filtration units and then discharged to a settling pond. Building wash-down water from the melt-pour buildings was also swept out through doorways onto the ground surrounding the buildings. The settling pond was an unlined triangular-shaped pond approximately 2 acres in size and 6 to 8 feet deep. Water from the impoundment was discharged to a surface stream that exited the installation. Contaminants of concern at this site are explosive compounds, VOCs, SVOCs and heavy metals.

A PBC was awarded to Shaw Environmental in September 2003 to complete an interim soil and sediment removal action at Load Lines 1, 2, 3 and 4. The RI/FS and PP are complete and the ROD is underway.

### CLEANUP STRATEGY

This site is anticipated to be transferred to NGB in FY08.

All foundations and footings will be removed (with BRAC funding). Sewage and drainage infrastructure will be addressed as needed.

The PBC project will result in an interim remedy with five years of long-term management. Additional investigations and possible remediation of the soils under the inaccessible portions of the buildings will be needed when concrete walls and foundations are removed.

Future land use by the OHARNG will involve armored vehicle maneuvering, with no digging. Soils may be disturbed to a depth of four feet.

Currently, part of this area, known as Load Line 4 Pond, is used for permitted wetlands access for waterfowl hunting and trapping. Future end uses include using water for fire suppression, dust control, trapping and fishing.

### STATUS

**REGULATORY DRIVER:** CERCLA

**RRSE:** Medium

**CONTAMINANTS OF CONCERN:** SVOCs, VOCs, Metals, Explosives

**MEDIA OF CONCERN:** Soil, Groundwater, Surface Water, Sediment

Phases	Start	End
PA .....	198802.....	198804
SI.....	198906.....	198906
RI/FS .....	200010.....	200608
RD .....	200406.....	200610
RA(C) .....	200406.....	200709

**RC: 200709**

## **RVAAP-11**

### **LOAD LINE 4 (PAGE 2 OF 2)**

Some explosively contaminated buildings (Buildings G-12 and G-12A) are expected to require removal of explosive residue using technology approved by USATCES and DDESB. All hazardous materials have been removed from the buildings. PCB paint issues remain. These demolition activities require coordination with the PBC soil removal activities.

# RVAAP-12

## LOAD LINE 12

### SITE DESCRIPTION

From 1941-1943 and 1946-1950, ammonium nitrate was produced at this site. From 1949 to 1993, munitions were periodically demilitarized. Building wash-down water and waste water from the bomb melt out facility operations was collected in a house gutter system, and flowed through a piping system to two stainless steel tanks. The first tank was used for settling and the second tank was used for filtration. Prior to the 1980s, the water leaked under the building and ponded there. Building wash-down water from Building F-904 was also swept out through doorways onto the ground surrounding the building. After 1981, the water was treated in the Load Line 12 wastewater treatment system. Contaminants of concern at this site are explosive compounds, nitrates and heavy metals. Media of concern include soil, surface water, sediment and groundwater. The NPDES permit for the original pink water treatment plant servicing Building F-904 was revoked May 1, 2000 because there was no more discharge from the decommissioned plant.

In 2000, a composting pilot study (IRA) was initiated using soils contaminated with explosives from the area of Building F-904. This pilot bioremediation project was successful for remediation of explosives.

High levels of nitrates exceeding the MCL were detected in the groundwater at this site. Metals and explosives were detected in the soil, sediment and groundwater. Metals were detected in surface water. This is one of the six sites in the FY05 PBC.

### CLEANUP STRATEGY

This site is anticipated to be transferred to NGB in FY08.

Soil removal is anticipated. Land use controls are anticipated. Future land use is mounted training with no digging. Monitored natural attenuation is anticipated for groundwater remediation for thirty years. Sewage and drainage infrastructure will be addressed as needed with BRAC funding.

### STATUS

**REGULATORY DRIVER:** CERCLA

**RRSE:** High

**CONTAMINANTS OF CONCERN:**  
Explosives, Metals, Nitrates

**MEDIA OF CONCERN:** Soil,  
Groundwater, Surface Water,  
Sediment

Phases	Start	End
PA.....	198802 .....	198804
SI.....	198906 .....	198906
RI/FS .....	199910 .....	200610
RD .....	200506 .....	200610
RA(C) .....	200506 .....	200709
RA(O) .....	200709 .....	203709
LTM .....	203710 .....	203809

**RIP: 200709**

**RC: 203709**

# BUILDING 1200 DILUTION/SETTLING POND

## SITE DESCRIPTION

From approximately 1941 to 1971, ammunition was demilitarized at this building by steaming munitions rounds. The steam decontamination generated pink water, which drained to a man-made ditch. The ditch discharged into a 0.5-acre sedimentation pond, and the overflow from this pond discharged into Sand Creek.

Contaminants of concern at this site are explosive compounds, propellants and metals. Media of concern include soil, surface water, sediment and groundwater.

This site was transferred to NGB in May 1999.

The buildings were demolished and all foundations and footings were removed.

## CLEANUP STRATEGY

A preliminary draft characterization report has been completed. This report will be used to procure a future PBC for this site. This PBC will take this site to RIP/RC. Soil removal, followed by groundwater sampling, is anticipated. Future use of this land is dismantled training - with digging.

## STATUS

**REGULATORY DRIVER:** CERCLA

**RRSE:** Low

**CONTAMINANTS OF CONCERN:**  
Explosives, Metals

**MEDIA OF CONCERN:** Soil,  
Groundwater, Surface Water,  
Sediment

Phases	Start	End
PA.....	198802 .....	198804
SI.....	198906 .....	198906
RI/FS .....	200408 .....	200904
RD .....	200902 .....	200909
RA(C) .....	200910 .....	201002
LTM .....	201010 .....	201509

**RC: 201002**

# FUZE AND BOOSTER QUARRY LANDFILL/PONDS

## SITE DESCRIPTION

This site operated during the period 1945 through 1993. The site consists of three ponds in an abandoned rock quarry. The ponds are 20 to 30 feet deep and are separated by earthen berms. Prior to 1976, the quarry was reportedly used for open burning and as a landfill. The debris from the burning/landfill was reported to have been removed during pond construction. From 1976 to 1993, spent brine regenerate and sand filtration backwash water from one of the RVAAP drinking water treatment plants was discharged into the ponds. This discharge was regulated under a NPDES permit (revoked May 1, 2000). In 1998, this site was expanded to include three other shallow settling ponds and two debris piles, bringing the site to approximately 45 acres. The lands adjacent to the quarry were utilized as an impact area to test 40mm grenades and to incinerate/deactivate fuze and booster components.

IRP constituents of concern include explosives and metals in groundwater, soil surface water and sediment.

An RI was completed in 2005 and an FS is underway. This is one of the six sites in the FY05 PBC. Perchlorate was detected in two surface water samples; a second round of confirmatory samples showed no detectable levels of perchlorate. An additional sampling event has been requested.

## CLEANUP STRATEGY

This site is anticipated to be transferred to NGB in FY09+.

A RD/RA of soil and dry sediment is proposed. Future land use is mounted training with no digging.

Currently this area is used for permitted wetlands access for waterfowl hunting and trapping. Future OHARNG uses include using water for fire suppression, dust control, trapping and fishing.

## STATUS

**REGULATORY DRIVER:** CERCLA

**RRSE:** High

**CONTAMINANTS OF CONCERN:**  
Metals, Explosives

**MEDIA OF CONCERN:** Soil,  
Sediment, Surface Water,  
Groundwater

Phases	Start	End
PA.....	198802 .....	198804
SI.....	198906 .....	198906
RI/FS .....	200212 .....	200611
RD .....	200506 .....	200611
RA(C) .....	200506 .....	200709
LTM .....	200710 .....	201309

**RC: 200709**

# LANDFILL NORTH OF WINKLEPECK BURNING GROUNDS

## SITE DESCRIPTION

This is an approximately 2.5-acre, unlined landfill formerly used for general plant refuse (sanitary wastes, possibly also explosive wastes and ash residue). It was used from 1969 until 1976 and has minimum soil cover. This landfill is up-gradient of a wetland area.

## CLEANUP STRATEGY

A preliminary draft characterization report has been completed. This report will be used to procure a future PBC for this site. This PBC will take this site to RIP/RC. Groundwater sampling is anticipated.

Approximately 2.5 acres of the site will receive a cover. LTM and future land use controls consist of restricted access. Areas surrounding the landfill perimeter are available for dismounted training - no digging.

## STATUS

**REGULATORY DRIVER:** CERCLA

**RRSE:** Low

**CONTAMINANTS OF CONCERN:**  
Metals, SVOCs, Propellants

**MEDIA OF CONCERN:** Soil,  
Groundwater, Surface Water,  
Sediment

Phases	Start	End
PA .....	198802 .....	198804
SI .....	198906 .....	198906
RI/FS .....	200408 .....	200904
RD .....	200901 .....	200906
RA(C) .....	200906 .....	200912
LTM .....	201010 .....	201510

**RC: 200912**

# RVAAP-28

## MUSTARD AGENT BURIAL SITE

### SITE DESCRIPTION

This unit is a possible mustard agent burial site approximately 15 x 18 ft. In 1969, records indicate that an Explosive Ordnance Disposal Unit excavated a suspected mustard agent burial site near the west end of the NACA runway. One 190-liter (50 gallon) drum and seven rusty canisters were recovered. All recovered items were empty and no contamination was discovered.

The suspected area is now marked by reflective Seibert stakes. Two non-intrusive, geophysical surveys (EM-31, and EM-61) of the site were completed in 1998. Several areas were identified with metallic responses. Some, if not all, may be related to cultural features at or near the surface. Surface soil samples collected in 1998 contained no thiodiglycol (mustard breakdown product). There was no sign of disturbed soil or numerous buried metallic objects that would clearly delineate a formal burial site.

Groundwater samples were collected to test for mustard and mustard breakdown products in 2004. No mustard or mustard breakdown products were found. Groundwater monitoring is ongoing. This site was transferred to NGB in May 1999.

### CLEANUP STRATEGY

A Final Groundwater Investigation and No Further Action Record of Decision are expected in December 2007. Future land use will be restricted access - no digging, marked by Seibert stakes.

### STATUS

**REGULATORY DRIVER:** CERCLA

**RRSE:** Low

**CONTAMINANTS OF CONCERN:**  
Mustard Agent

**MEDIA OF CONCERN:** Soil,  
Groundwater

Phases	Start	End
PA.....	198802 .....	198804
SI .....	198906 .....	198906
RI/FS .....	200306 .....	200801
LTM .....	200801 .....	201309

**RC: 200801**

# RVAAP-29

## UPPER AND LOWER COBB PONDS

### SITE DESCRIPTION

The Upper and Lower Cobb Pond complex consists of two unlined ponds that received discharges from Load Lines 3 and 12 explosive waste water treatment systems from 1941 through 1971. Upper Cobb Pond is approximately 5 acres and Lower Cobb Pond is approximately 4 acres.

Contaminants of concern include explosives and metals. The RI is completed.

### CLEANUP STRATEGY

This site is anticipated to be transferred to NGB in FY07.

The Proposed Plan and Record of Decision are scheduled for 2007-2008.

No remedial action is expected. LTM consisting of five years of groundwater monitoring may follow. OHARNG future use will be dismounted training, with no digging.

### STATUS

**REGULATORY DRIVER:** CERCLA

**RRSE:** Medium

**CONTAMINANTS OF CONCERN:**  
Explosives, Metals

**MEDIA OF CONCERN:** Soil,  
Groundwater, Surface Water,  
Sediment

<b>Phases</b>	<b>Start</b>	<b>End</b>
PA.....	198802 .....	198804
SI .....	198906 .....	198906
<b>RI/FS .....</b>	<b>200101 .....</b>	<b>200802</b>
LTM .....	200810 .....	201406

**RC: 200802**

# RVAAP-32

## 40 MM FIRING RANGE

### SITE DESCRIPTION

This site was used as a test firing range for 40 mm projectiles during the late 1960s and early 1970s. This site was reported by former workers at RVAAP to have been a test firing range for munitions. The dates of this operation were from 1969-71. No original file documentation exists for the operation. UXO is suspected at this approximately 2-acre site.

The site is partially covered with pole timber. Soil samples collected by USACHPPM in 1996 detected arsenic and cadmium above the RRSE screening concentrations.

Additional samples were collected in fall 2003. A site characterization report was submitted in January 2005.

### CLEANUP STRATEGY

Complete the PP and ROD. No removal action is anticipated at this site. MEC concerns are addressed under RVAAP-032-R-01. The OHARNG future use will be mounted training with no digging.

### STATUS

**REGULATORY DRIVER:** CERCLA

**RRSE:** Medium

**CONTAMINANTS OF CONCERN:**  
Metals, Nitrocellulose

**MEDIA OF CONCERN:** Soil

Phases	Start	End
PA.....	199407 .....	199602
SI .....	199607 .....	199612
RI/FS.....	200306 .....	200703

**RC: 200703**

# RVAAP-33

## LOAD LINE 6

### SITE DESCRIPTION

This site operated primarily as a fuze assembly line from 1941 to 1945, when it was deactivated. This site was also used as the Firestone Test Facility from 1950 until the late 1970s. It was reported by former workers at RVAAP to have been a security classified experimental test facility for munitions. Shaped charges were constructed and tested for the Department of Defense. The site consists of a pond (underwater test chamber) and several buildings (approximately 45 acres). The dates of operation are not known. No original file documentation exists for this site. The contaminants of potential concern are explosives and metals.

All but four of the buildings were burned; those four structures were removed in 2005. The preliminary Draft RI was completed in December 2005.

### CLEANUP STRATEGY

This site is anticipated to be transferred to NGB in FY09+. Record of Decision is scheduled for September 2008. MEC will be addressed under MMRP site RVAAP 033-R-01. Soil removal is anticipated as part of the IRP, followed by five years of LTM. Short-term land use controls may be needed until completion of MMRP. Future OHARNG use is expected to be mounted training with no digging.

All foundations and footings will be removed (not ER,A eligible). Sewage and drainage infrastructure will be addressed as needed.

### STATUS

**REGULATORY DRIVER:** CERCLA

**RRSE:** Medium

**CONTAMINANTS OF CONCERN:**  
Explosives, Metals

**MEDIA OF CONCERN:** Soil,  
Groundwater, Surface Water,  
Sediment

Phases	Start	End
PA.....	199407 .....	199602
SI.....	199407 .....	199901
RI/FS .....	200207 .....	200809
RD .....	200805 .....	200810
RA(C) .....	200810 .....	200910
LTM .....	200910 .....	201411

**RC: 200910**

# RVAAP-34

## SAND CREEK DISPOSAL ROAD LANDFILL

### SITE DESCRIPTION

This site was reported by former workers at RVAAP to have been an open dump for concrete, wood, asbestos debris, lab bottles, 55-gallon drums and fluorescent light tubes. Debris is at the surface, but covered by vegetation. The site is approximately 2.7 acres and located adjacent to Sand Creek. The dates of operation of this site are not known, but are believed to be around the 1950s.

Sediment and surface water samples indicated metals and SVOCs were leaching into Sand Creek, an Ohio Reference Water.

Soil and debris removal (IRA) was completed in summer 2003. The IRA was documented in a report submitted in April 2004. This site was transferred to NGB in May 1999.

### CLEANUP STRATEGY

An analytical screening evaluation risk report is under review. The Proposed Plan and Record of Decision are scheduled for FY06.

OHARNG future use will be dismantled training with no digging.

All facility-wide project funding will be tracked under this site. These projects include Risk Assessment Updates, Facility-wide Groundwater Monitoring Program, Ravenna Environmental Information Management System, Property Management Plan (LUC), Facility Scheduling, and facility-wide documents and their addendums (such as the Sampling and Analysis plan, Health and Safety Plan, Project Management Plan).

### STATUS

**REGULATORY DRIVER:** CERCLA

**RRSE:** High

**CONTAMINANTS OF CONCERN:**  
Metals, SVOCs

**MEDIA OF CONCERN:** Soil,  
Surface Water, Sediment

Phases	Start	End
PA.....	199407 .....	199602
SI .....	199407 .....	199906
RI/FS .....	200201 .....	200208
RD .....	200209 .....	200303
RA(C).....	200209 .....	200409
LTM .....	200410 .....	201410

**RC: 200409**

# RVAAP-38 NACA TEST AREA

## SITE DESCRIPTION

This is an approximately 12-acre site that was used as an aircraft test area by NCA. Surplus military aircraft were crashed into a barrier, using a fixed rail attached to the aircraft landing gear, in an attempt to develop crash-worthy fuel tanks and/or high flashpoint aviation fuel. Some of the aircraft were buried at the site after the tests. Open Demolition Area 1, RVAAP- 03, is located within the RVAAP-38 boundary.

Low levels of metals and organics were detected in soil. Nitrocellulose was detected in the sediment. Additional study is needed. The Phase I RI was completed for NACA in 2002. This site was transferred to NGB in May 1999.

## CLEANUP STRATEGY

A preliminary draft characterization report has been completed. This report will be used to procure a future PBC for this site. This PBC will take this site to RIP/RC. Soil removal, followed by groundwater sampling, is anticipated. Future use of this land is dismantled training with no digging.

Soil bio-remediation is anticipated. Land use controls will be addressed under site RVAAP-34. LTM consisting of groundwater monitoring for five years is expected.

## STATUS

**REGULATORY DRIVER:** CERCLA

**RRSE:** Medium

**CONTAMINANTS OF CONCERN:**  
Metals, SVOCs

**MEDIA OF CONCERN:** Soil,  
Groundwater, Surface Water,  
Sediment

Phases	Start	End
PA .....	199508 .....	199602
SI .....	199508 .....	199812
RI/FS .....	199909 .....	200810
RD .....	200806 .....	200811
RA(C) .....	200811 .....	200904
LTM .....	200910 .....	201412

**RC: 200904**

# RVAAP-39 LOAD LINE 5

## SITE DESCRIPTION

This site operated from 1941 to 1945 to produce fuzes for artillery projectiles. Load Line 5 was deactivated and its equipment removed in 1945.

Metals and SVOCs above screening criteria were detected in soil, sediment, and surface water samples.. Nitrates above screening criteria were also detected in surface water

## CLEANUP STRATEGY

This site is anticipated to be transferred to NGB in FY09+.

A preliminary draft characterization report has been completed. This report will be used to procure a future PBC for this site. This PBC will take this site to RIP/RC. Soil removal, followed by groundwater sampling, is anticipated.

Buildings will be demolished with non-ER,A funds. A RD/RA such as soil removal may be needed. Future use by the OHARNG consists of mounted training with no digging. Land use controls are addressed under RVAAP-34.

All foundations and footings will be removed (not ER,A eligible). Sewage and drainage infrastructure will be addressed as needed.

## STATUS

**REGULATORY DRIVER:** CERCLA

**RRSE:** Medium

**CONTAMINANTS OF CONCERN:**  
SVOCs, Metals

**MEDIA OF CONCERN:** Soil,  
Groundwater, Sediment, Surface  
Water

<b>Phases</b>	<b>Start</b>	<b>End</b>
PA .....	199802.....	199806
SI.....	199807.....	199807
<b>RI/FS .....</b>	<b>200408.....</b>	<b>200810</b>
LTM.....	200910.....	201412

**RC: 200810**

# RVAAP-40 LOAD LINE 7

## SITE DESCRIPTION

This site was used to assemble booster charges for artillery projectiles between 1941 and 1945. Load Line 7 (LL-7) was deactivated and the equipment was removed in 1945. LL-7 was used again in 1969 and 1970 to produce 40mm projectiles. Additionally, the LL-7 Pink Water Treatment Plant was in operation between 1989 and 1993.

Metals, VOCs, SVOCs and explosives were detected in soil, sediment, surface water and groundwater above screening levels.

## CLEANUP STRATEGY

This site is anticipated to be transferred to NGB in FY09+.

A preliminary draft characterization report has been completed. This report will be used to procure a future PBC for this site. This PBC will take this site to RIP/RC. Soil removal, followed by groundwater sampling, is anticipated.

Buildings will be demolished with non-ER,A funds. A RD/RA such as soil removal may be needed. Future use by the OHARNG consists of mounted training with no digging. Land use controls are addressed under RVAAP-34.

All foundations and footings will be removed (not ER,A eligible). Sewage and drainage infrastructure will be addressed as needed.

## STATUS

**REGULATORY DRIVER:** CERCLA

**RRSE:** Low

**CONTAMINANTS OF CONCERN:**  
Explosives, Metals, VOCs, SVOCs

**MEDIA OF CONCERN:** Soil,  
Groundwater, Sediment, Surface  
Water

<b>Phases</b>	<b>Start</b>	<b>End</b>
PA.....	199802 .....	199806
SI .....	199807 .....	199807
<b>RI/FS.....</b>	<b>200408 .....</b>	<b>201002</b>
LTM.....	201010 .....	201509

**RC: 201002**

# RVAAP-41 LOAD LINE 8

## SITE DESCRIPTION

This site was used to assemble booster charges for artillery projectiles between 1941 and 1945. Load Line 8 was deactivated and the equipment was removed in 1945.

Metals, VOCs, SVOCs and explosives were detected in soil, sediment, surface water and groundwater above screening levels.

## CLEANUP STRATEGY

This site is anticipated to be transferred to NGB in FY09+.

A preliminary draft characterization report has been completed. This report will be used to procure a future PBC for this site. This PBC will take this site to RIP/RC. Soil removal, followed by groundwater sampling, is anticipated.

Buildings will be demolished with non-ER,A funds. A RD/RA such as soil removal may be needed. Future use by the OHARNG consists of mounted training with no digging. Land use controls are addressed under RVAAP-34.

All foundations and footings will be removed (not ER,A eligible). Sewage and drainage infrastructure will be addressed as needed.

## STATUS

**REGULATORY DRIVER:** CERCLA

**RRSE:** Medium

**CONTAMINANTS OF CONCERN:**  
Explosives, Metals, SVOCs, VOCs

**MEDIA OF CONCERN:** Soil,  
Groundwater, Sediment, Surface  
Water

Phases	Start	End
PA .....	199802 .....	199806
SI .....	199807 .....	199807
RI/FS .....	200408 .....	200903
LTM .....	200912 .....	201412

**RC: 200903**

# RVAAP-42 LOAD LINE 9

## SITE DESCRIPTION

This site operated from 1941 to 1945 to produce detonators. Load Line 9 was deactivated and its equipment removed in 1945.

Limited samples collected in 2000 detected low levels (below 2%) of lead azide in sediment and surface water in the sumps. The buildings were burned in 2003.

A preliminary draft RI was submitted in December 2005.

## CLEANUP STRATEGY

This site is anticipated to be transferred to NGB in FY09+. The Record of Decision is scheduled for August 2008.

## STATUS

**REGULATORY DRIVER:** CERCLA

**RRSE:** Medium

**CONTAMINANTS OF CONCERN:**  
Explosives, Metals

**MEDIA OF CONCERN:** Soil,  
Groundwater, Surface Water,  
Sediment

Phases	Start	End
PA.....	199802 .....	199806
SI.....	199807 .....	199807
RI/FS .....	200208 .....	200809
LTM .....	201010 .....	201509

**RC: 200809**

Sewage and drainage infrastructure will be addressed as needed.

LTM consists of land use controls and groundwater monitoring for five years. Future use by the OHARNG consists of mounted training with no digging.

# RVAAP-43 LOAD LINE 10

## SITE DESCRIPTION

This site operated from 1941 to 1945 to produce percussion elements. Load Line 10 was placed on standby in 1945. From 1951 to 1957, LL-10 produced primers and percussion elements. From 1969 to 1971, LL-10 was used again to produce primers. It has been inactive since.

Metals, explosives, SVOCs, and VOCs have been detected in soil, sediment, surface water and groundwater above screening criteria.

## CLEANUP STRATEGY

This site is anticipated to be transferred to NGB in FY09+.

A preliminary draft characterization report has been completed. This report will be used to procure a future PBC for this site. This PBC will take this site to RIP/RC. Soil removal, followed by groundwater sampling, is anticipated.

Buildings will be demolished with non-ER,A funds. A RD/RA such as soil removal may be needed. Future use by the OHARNG consists of mounted training with no digging. Land use controls are addressed under RVAAP-34.

Sewage and drainage infrastructure will be addressed as needed.

## STATUS

**REGULATORY DRIVER:** CERCLA

**RRSE:** Medium

**CONTAMINANTS OF CONCERN:**  
Explosives, Metals, SVOCs, VOCs

**MEDIA OF CONCERN:** Soil,  
Sediment, Surface Water,  
Groundwater

Phases	Start	End
PA.....	199802 .....	199806
SI .....	199807 .....	199807
RI/FS .....	200408 .....	200903
LTM .....	201010 .....	201501

**RC: 200903**

# RVAAP-44 LOAD LINE 11

## SITE DESCRIPTION

This site operated from 1941 to 1945 to produce primers for artillery projectiles. Load Line 11 was placed on standby in 1945. From 1951 to 1957, LL-11 was used to produce primers and fuzes.

In 2001, the lead-lined sumps, lead contaminated sediments, and solvent contaminated soils were removed during an IRA in 2001. The Final IRA report was submitted in April 2004. Some of the sewer lines were also permanently plugged with grout to prevent migration of contaminants. The RI was completed in FY05 prior to demolition of the buildings. Additional sampling has been requested for those areas where buildings once stood. Demolition of the buildings occurred in 2004-2005.

## CLEANUP STRATEGY

This site is anticipated to be transferred to NGB in FY09+.

A Proposed Plan and ROD will be developed in FY07.

No remediation is expected. LTM consists of groundwater monitoring for five years. OHARNG land use will be mounted training with no digging.

Sewage and drainage infrastructure will be addressed as needed.

## STATUS

**REGULATORY DRIVER:** CERCLA

**RRSE:** Medium

**CONTAMINANTS OF CONCERN:**  
Explosives, Metals, VOCs

**MEDIA OF CONCERN:** Soil,  
Groundwater

Phases	Start	End
PA.....	199802 .....	199806
SI.....	199807 .....	199807
RI/FS .....	199910 .....	200802
LTM .....	200810 .....	201312

**RC: 200802**

# RVAAP-45 WET STORAGE AREA

## SITE DESCRIPTION

This site was used from 1941 to 1945 to store primary explosives in water-filled drums. There is no documentation concerning any spills in the area.

Contaminants of concern include metals, VOCs, and explosives.

Four of the six buildings were demolished in spring 2003-2004.

## CLEANUP STRATEGY

This site is anticipated to be transferred to NGB in FY09+.

A preliminary draft characterization report has been completed. This report will be used to procure a future PBC for this site. This PBC will take this site to RIP/RC. Soil removal, followed by groundwater sampling, is anticipated.

A RD/RA such as soil removal may be needed. Future use by the OHARNG consists of mounted training with no digging. Land use controls are addressed under RVAAP-34.

Sewage and drainage infrastructure will be addressed as needed.

## STATUS

**REGULATORY DRIVER:** CERCLA

**RRSE:** Low

**CONTAMINANTS OF CONCERN:**  
Metals, SVOCs, Explosives

**MEDIA OF CONCERN:** Soil

Phases	Start	End
PA.....	199802 .....	199806
SI .....	199807 .....	199807
RI/FS .....	200408 .....	200904
RD .....	200910 .....	201006
RA(C).....	200910 .....	201006

**RC: 201006**

# RVAAP-46 BUILDING F-15 AND F-16

## SITE DESCRIPTION

These buildings were used during World War II, the Korean Conflict and Vietnam War to test miscellaneous explosives. Quantities and exact dates of testing are unknown.

Metals, explosives and SVOCs have been detected in soil and surface water above screening criteria.

This site was transferred to NGB in May 1999.

## CLEANUP STRATEGY

A preliminary draft characterization report has been completed. This report will be used to procure a future PBC for this site. This PBC will take this site to RIP/RC. Soil removal, followed by groundwater sampling, is anticipated.

Soil removal is anticipated. Future use by the OHARNG consists of dismounted training with digging up to seven feet.

Foundations and footings will be removed (not ER,A eligible). Sewage and drainage infrastructure will be addressed as needed.

## STATUS

**REGULATORY DRIVER:** CERCLA

**RRSE:** Medium

**CONTAMINANTS OF CONCERN:**  
Explosives, Metals, SVOCs

**MEDIA OF CONCERN:** Soil  
Surface Water

Phases	Start	End
PA .....	199802 .....	199806
SI .....	199807 .....	199807
RI/FS .....	200312 .....	200904
RD .....	200910 .....	201006
RA(C) .....	200910 .....	201006
LTM .....	201110 .....	201209

**RC: 201006**

# RVAAP-48 ANCHOR TEST AREA

## SITE DESCRIPTION

Limited information is known about this research and development area. It is believed that the site was used for testing of explosively driven soil anchoring devices. The dates of use for this site are unknown. It currently consists of several dirt mounds with a nearby sand pit (approximately 6 x 30 ft). There is metal debris in the area.

Metals have been detected in soil above screening levels.

## CLEANUP STRATEGY

This site is anticipated to be transferred to NGB in FY09+.

A preliminary draft characterization report has been completed. This report will be used to procure a PBC for this site. This PBC will take this site to RIP/RC.

Future use by the OHARNG consists of dismounted training with digging.

LTM consists of groundwater monitoring for five years.

## STATUS

**REGULATORY DRIVER:** CERCLA

**RRSE:** Medium

**CONTAMINANTS OF CONCERN:**  
Metals

**MEDIA OF CONCERN:** Soil

Phases	Start	End
PA.....	199802 .....	199806
SI .....	199807 .....	199807
RI/FS .....	200408 .....	200901
LTM .....	200902 .....	201410

**RC: 200901**

# RVAAP-49 CENTRAL BURN PITS

## SITE DESCRIPTION

This approximately 20-acre site was used for the burning of non-explosive scrap materials. The dates of operation for the site are unknown.

This site was transferred to NGB in May 1999.

The RI was completed in 2005. Metals and SVOCs were identified in two debris piles at levels which require removal.

This is one of the six sites in the FY05 PBC.

## CLEANUP STRATEGY

A PP/ROD will be developed. A RD/RA of soil removal may be required, followed by LTM. OHARNG future use will be dismantled training with no digging.

## STATUS

**REGULATORY DRIVER:** CERCLA

**RRSE:** High

**CONTAMINANTS OF CONCERN:**  
SVOCs, Metals

**MEDIA OF CONCERN:** Soil

Phases	Start	End
PA .....	199802 .....	199806
SI .....	199807 .....	199807
RI/FS.....	200010 .....	200610
RD.....	200506 .....	200611
RA(C) .....	200506 .....	200709
LTM.....	200810 .....	201310

**RC: 200709**

# RVAAP-50 ATLAS SCRAP YARD

## SITE DESCRIPTION

This site (approximately 150 acres) is an old construction camp built to house workers during the construction of the plant. Facilities were demolished following World War II. Since that time, the area has been used as a scrap yard for miscellaneous materials.

Explosives, SVOCs and metals have been detected in soils, sediment, surface water and groundwater above screening levels.

This site was transferred to NGB in May 1999.

## CLEANUP STRATEGY

A preliminary draft characterization report has been completed. This report will be used to procure a future PBC for this site. This PBC will take this site to RIP/RC. Soil removal, followed by groundwater sampling, is anticipated.

Future use by the OHARNG consists of mounted training with no digging.

LTM consisting of groundwater monitoring and short-term land use controls are anticipated. Soil removal is anticipated.

MEC will be addressed under RVAAP-050-R-01.

## STATUS

**REGULATORY DRIVER:** CERCLA

**RRSE:** Medium

**CONTAMINANTS OF CONCERN:**  
Explosives, SVOCs, Metals

**MEDIA OF CONCERN:** Soil,  
Groundwater, Surface Water,  
Sediment

Phases	Start	End
PA .....	199802 .....	199806
SI .....	199807 .....	199807
RI/FS .....	200408 .....	200903
RD .....	200910 .....	201009
RA(C) .....	200910 .....	201009
LTM .....	201010 .....	201506

**RC: 201009**

## IRP No Further Action Sites Summary

AEDB-R#	Site Title	Documentation/Reason for NFA	NFA Date
RVAAP-03	Open Demolition Area #1	Ohio EPA states that site is not closed. In letter dated 27 April 2004, Ohio EPA indicated that the OE/UXO IRA report is final. PP/ROD Pending.	200309
RVAAP-07	Bldg. 1601 Hazardous Waste Storage	Closure plan approval letter from Director of Ohio EPA, dated 02/12/1998 (with modifications). Letter from RVAAP responded with modified pages 06/26/2000. Closed under RCRA	198906
RVAAP-14	Load Line 6 Evaporation Unit	Operational from 1987-1993. Not eligible for ER,A funding	198906
RVAAP-15	Load Line 6 Treatment Plant	Operational from 1987-1993. Not eligible for ER,A funding	200001
RVAAP-17	Deactivation Furnace	The DFA was not closed. Soils and groundwater were moved over to the CERCLA side of the house under the Directors Findings and Orders (see section VI (9) (c). Journalized date June 10, 2004. RCRA closure plan submitted 23 Feb 2001.	198906
RVAAP-18	Load Line 12 Wastewater Treatment Plant	Operational until 1983. Revocation of NPDES permit effective May 1, 2000	199703
RVAAP-20	Sand Creek Sewage Treatment Plant	Operational until 1993. Letter from Director of Ohio EPA. NPDES permit revoked May 1, 2000.	198906
RVAAP-21	Depot Sewage Treatment Plant	Operational until 1983. NPDES permit revoked May 1, 2000.	198906
RVAAP-22	George Road Sewage Treatment Plant	Operational until 1983. NPDES permit revoked May 1, 2000.	198906
RVAAP-23	Unit Training Equipment Site UST	closeout letter from OSFM BUSTR dated 02/05/2003	198911
RVAAP-24	Waste Oil Tank	Not eligible for ER,A funding	198906
RVAAP-25	Bldg. 1034 Motor Pool AST	Not eligible for ER,A funding	198906

## IRP No Further Action Sites Summary (cont.)

AEDB-R#	Site Title	Documentation/Reason for NFA	NFA Date
RVAAP-26	Fuze Booster Area Settling Tanks	15 tanks scattered among LL 5 (1 tank), 7 (1 removed in 1988), 9 (2 tanks), 10 (9 tanks-1 AST, 8 USTs), 11 (3 tanks); all tanks emptied, cleaned and covered in 1971. Soils are being investigated in conjunction with site specific media investigation/cleanup.	200001
RVAAP-27	Building 854, PCB Storage	Letter from Ohio EPA dated September 1, 1999 stating NFA.	198906
RVAAP-30	Load Line 7 Treatment Plant	Operational until 1983. Revocation of NPDES permit effective May 1, 2000	200001
RVAAP-31	Ore Pile Retention Pond	Revocation of NPDES permit effective May 1, 2000	200001
RVAAP-35	1037 Building-Laundry Wastewater Sump	Not eligible for ER,A funding	200001
RVAAP-36	Pistol Range	Letter from Ohio EPA regarding the delay of clean-up until range no longer used, dated February 14, 2006. Range being used by OHARNG.	200509
RVAAP-37	Pesticide Building S-4452	Closure letter from Ohio EPA dated September 19, 2000.	199602
RVAAP-47	Building T-5301	Statement of Basis - signed by RVAAP and Ohio EPA on December 07, 2000. Clean up to background/bedrock. IRA in FY00 left no contaminants in place.	200109
RVAAP-51	Dump Along Paris-Windham Road	IRA completed FY04. PP/ROD Pending.	200409

**Initiation of IRP:** 1989

**Past Phase Completion Milestones**

**1990**

PA, Installation 38 sites

**1996**

PA/RI Action Plan

Phase I RI High Priority sites

USACHPPM: Hazardous Medical Waste Study RRSE for Newly Added Sites at RVAAP

**1998**

Phase II RI Winklepeck Burning Grounds Field Work Complete/Draft Report under Review

Facility-wide Background Field Work Complete/Draft Report currently under Review

RRSE for 13 new sites Field Work Complete/Draft Report Currently under Review

**1999**

RI - Phase II Erie Burning Grounds

RI - Phase II NACA Test Area

RI - Phase II Open Demolition Area #1

**2000**

IRA - LL 12/ Bioremediation Pilot Study Demonstration Complete

RI - Phase II Erie Burning Grounds Draft Report Completed/ Under Review

RI - Phase I NACA Test Area Field Work/Draft Report Completed/Under Review

RI - Phase I Open Demolition Area #1 Field Work/Draft Report Completed/ Under Review

RI - Winklepeck Open Burning Grounds Ecological Risk Assessment Field Work Complete

IRA - Building 5301 Completed/No Further Action Status

Facility-Draft Revision to Wide SAP and HSP completed

**2001**

RI - Phase I Load Line 11 Field Work Complete

RI - Phase II Load Line 1, 12 Field Work Complete

FS - Winklepeck Field Work Completed

RI - Phase I Load Line 11 Field Work Completed

IRA - Open Demolition Area #1 Fieldwork Completed

RI - Load Lines 2, 3, 4 Fieldwork (Phase II) Completed

RI - Central Burn Pits Phase I Fieldwork Completed

RI - Upper & Lower Cobb Ponds Phase I Fieldwork Completed

**2002**

RI- Phase II Open Demolition Area #2 Fieldwork Completed

- Work Plans completed for the IRAs at Paris Windham Road Dump (RVAAP-51) and Sand Creek Disposal Road Landfill (RVAAP-34)

### **2002 (cont.)**

- IRA reports for Open Demolition Area #1 (RVAAP-03) and Load Line 11 (RVAAP-44) issued
- Work Plans for Open Demolition Area #2 completed
- Draft Final Report for Winklepeck Burning Grounds Biological Field Truthing project issued.
- Work Plans issued for Facility-wide Human Health and Ecological Risk Assessments issued.
- Draft Work Plans for Facility-wide surface water assessment issued

### **2003**

PBC for soil/sediment at Load Lines 1, 2, 3 and 4

RI- Field work for LL 6 & 9 and the Fuze & Booster Quarry Landfill Pond Completed

### **2004**

- Facility wide surface water assessment
- Finalize RI for load lines 1, 2, 3, 4, 12
- Finalize Load Line 11 IRA
- Signing of findings and orders
- Award and completion of field work for the 14 sites characterization study
- Initiation of facility wide groundwater monitoring plan
- RVAAP facility wide Human Health Risk Manual
- RVAAP facility wide Ecological Risk Work Plan
- Establishment of the RVAAP communication and environmental information management system, including websites (REIMS)
- Initiated comprehensive inter-agency project schedule
- Finalize UXO ASR
- Finalize Winklepeck Burning Ground Focused Feasibility Study

### **2005**

- Awarded PBC for six high RRSE sites
- Facility-wide Groundwater Monitoring Program initiated - quarterly sampling and reporting
- Initiated Mustard Area Groundwater Evaluation
- Completed four of six RIs for High RRSE AOCs
- Completed four FSs and four PPs for Load Lines 1-4 PBC
- Completed RIs for Upper/Lower Cobbs Pond, Load Lines 6, 9 and 11

### ***Projected Record of Decision (ROD)/Decision Document (DD) Approval Dates:***

2007: RVAAP-01, 02, 04, 05, 08, 09, 10, 11, 12, 16, 32, 49

2008: RVAAP-28, 29, 44

2009+: RVAAP-06, 13, 19, 33, 36, 38, 39, 40, 41, 42, 43, 45, 46, 48, 50

***Schedule for Next Five Year Review:*** Unknown

***Estimated Completion Date of IRP (including LTM phase):*** 2044

## Ravenna AAP Installation Action Plan Schedule

(Based on Cost-to-Complete)

AEDB-R #	PHASE	FY07	FY08	FY09	FY10	FY11	FY12	FY13	FY14	FY15+
PBC at Ravenna	RA( C)									
	LTM									
RVAAP-01	LTM									202109
RVAAP-02	LTM									
RVAAP-04	LTM									
RVAAP-05	RD									
	RA(C )									
	LTM									
RVAAP-06	RI									
	RD									
	RA(C )									
	LTM									201611
RVAAP-12	RA(O)									203709
	LTM									203809
RVAAP-13	RI									
	RD									
	RA(C )									
	LTM									201509
RVAAP-16	LTM									
RVAAP-19	RI									
	RD									
	RA(C )									
	RA(O)									201510
RVAAP-28	RI									
	LTM									
RVAAP-29	RI									
	LTM									
RVAAP-33	RI									
	RD									
	RA(C )									
	LTM									201411
RVAAP-34	LTM									
RVAAP-36	RI									
	RD									
	RA(C )									
	LTM									

## Ravenna AAP Installation Action Plan Schedule

(Based on Cost-to-Complete)

AEDB-R #	PHASE	FY07	FY08	FY09	FY10	FY11	FY12	FY13	FY14	FY15+
RVAAP-38	RI									
	RD									
	RA(C )									
	LTM									201412
RVAAP-39	RI									
	RD									
	RA(C )									
	LTM									201412
RVAAP-40	RI									
	RD									
	RA(C )									
	LTM									201509
RVAAP-41	RI									
	RD									
	RA(C )									
	LTM									201412
RVAAP-42	RI									
	RD									
	RA(C )									
	LTM									201509
RVAAP-43	RI									
	RD									
	RA(C )									
	LTM									201501
RVAAP-44	RI									
	LTM									
RVAAP-45	RI									
	RD									
	RA(C )									
	LTM									
RVAAP-46	RI									
	RD									
	RA(C )									
	LTM									
RVAAP-48	RI									
	LTM									
RVAAP-49	LTM									

## Ravenna AAP Installation Action Plan Schedule

(Based on Cost-to-Complete)

AEDB-R #	PHASE	FY07	FY08	FY09	FY10	FY11	FY12	FY13	FY14	FY15+
RVAAP-50	RI									
	RD									
	RA(C )									
	LTM									201506

## Prior Years Funds

**Funding up to FY04: \$36,439K**

Year	Site Information	Expenditures	FY Total
<b>FY05</b>	PBC at Ravenna, RAC	2,612K	
	RAB/TAPP	23K	
	RAB/TAPP	2K	
	RVAAP-01, RI	20K	
	RVAAP-02, RI	17K	
	RVAAP-06, RI	5K	
	RVAAP-12, RI	5K	
	RVAAP-13, RI	5K	
	RVAAP-16, RI	17K	
	RVAAP-19 RI	5K	
	RVAAP-28 RI	87K	
	RVAAP-34 LTM	937K	
	RVAAP-36 RI	5K	
	RVAAP-38 RI	5K	
	RVAAP-39 RI	5K	
	RVAAP-40 RI	5K	
	RVAAP-41 RI	16K	
	RVAAP-42 RI	23K	
	RVAAP-43 RI	20K	
	RVAAP-44 RI	34K	
	RVAAP-45 RI	20K	
	RVAAP-46 RI	20K	
	RVAAP-48 RI	20K	
	RVAAP-49 RI	34K	
	RVAAP-50 RI	20K	
			<b>\$3,962K</b>

**Total Funding thru FY05: \$40,401K**

## Current Year Funds

Year	Site Information	Expenditures	FY Total
<b>FY06</b>	PBC at Ravenna RAC	50K	
	RVAAP-05 RAC	10K	
	RVAAP-05 RAC	15K	
	RVAAP-05 RAC	1139K	
	RVAAP-05 RD	2K	
	RVAAP-05 RD	0K	
	RVAAP-05 RD	34K	
	RVAAP-05 RI	58K	
	RVAAP-05 RI	0K	
	RVAAP-05 RI	0K	
	RVAAP-28 RI	2K	
	RVAAP-28 RI	0K	

## Current Year Funds (cont.)

Year	Site Information	Expenditures	FY Total
<b>FY06</b>	RVAAP-28 RI	64K	
	RVAAP-34 LTM	236K	
	RVAAP-34 LTM	110K	
	RVAAP-34 LTM	100K	
	RVAAP-34 LTM	100K	
	RVAAP-34 LTM	20K	
	RVAAP-34 LTM	1509K	
	RVAAP-34 LTM	829K	
	RVAAP-34 LTM	230K	
	RAB/TAPP	49K	<b>\$4,835K</b>

**Total Funding FY06: \$4,835K**

**Total Future Requirements: \$32,291K**

**Total Program Cost (from inception to completion of the IRP): \$77,527K**

# RAVENNA ARMY AMMUNITION PLANT

## Military Munitions Response Program

**Total AEDB-R MMRP Sites/AEDB-R sites with Response Complete:** 19/1

***AEDB-R Site Types***

- 11 Unexploded Munitions/Ordnance
  - 1 Exploded Ordnance Disposal Area
  - 2 Disposal Pits/Dry Wells
  - 5 Open Burn

***Most Widespread Contaminants of Concern:*** MEC, MC

***Media of Concern:*** Soil, Surface Water, Groundwater and Sediment

***Completed REM/IRA/RA:*** None

***Total MMRP Funding***

Prior Years (up to FY05):	\$ 290K
Current Year (FY06):	\$ 0K
Future Requirements (FY07+):	<u>\$8,848K</u>
Total:	\$9,138K

***Duration of MMRP***

Year of MMRP Inception: 2002

Year of MMRP RIP/RC: 2012

Year of MMRP Completion Including LTM: 2044

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## MMRP Contamination Assessment

Twelve load lines at RVAAP were used to load assemble, and pack (LAP) high explosive munitions and components during World War II, and the Korean and Vietnam Wars. Munitions were also periodically demilitarized and renovated during non-production periods up until 1988. More than 36 million large caliber projectiles, 600 thousand general-purpose bombs, and 420 million munitions components such as fuzes, boosters, and percussion elements were produced during World War II. During the Korean War, more than 11 million projectiles, 4 million propelling charges and cartridges, 220 million munitions components, and a million antitank mines were produced. Although production declined during the Vietnam War compared to the previous two production periods, RVAAP produced in excess of two and a half million large caliber projectiles, 16 million 40-millimeter grenades, seven million fuzes and 80 million primers. Most of the demilitarization of munitions took place after World War II and the Korean War. Off spec or excess RVAAP munitions as well as munitions from other sources were either disassembled with the explosives being recovered or they were burned or detonated at various locations on the facility. Some high explosive munitions made at other US facilities and even from Europe were sent to RVAAP to be demilitarized.

With the exception of ammonium nitrate, all hardware components and explosives used in the LAP operations at RVAAP were manufactured at other facilities. Load Line 12 was used from 1941 to 1943 to make high-grade ammonium nitrate used for mixing with TNT to make amatol. Fertilizer grade ammonium nitrate was produced in the late 1940s for export to Europe. In addition to amatol and pure TNT, Composition B, a mixture of RDX and TNT, was the only other secondary explosive used in large quantities at RVAAP. The primary explosives, lead azide and lead styphnate, were used extensively in the fuze and booster lines. Teteryl and black powder were also used in the components made at these lines. The principle propellants used at RVAAP were nitrocellulose, nitroglycerine, and nitroguanidine in various mixtures. Projectiles from 37 to 240 millimeter were produced at RVAAP with 90, 120, and 155 millimeter being the most common caliber. The general-purpose bombs produced at the facility ranged from 100 to 2,000 pounds gross weight. More information on the chemicals and types of munitions used or produced at RVAAP can be found in the June 2004 ASR for RVAAP.

An inventory of the closed, transferring, and transferred (CTT) ranges or sites at RVAAP was completed in November 2003 under the Army's Military Munitions Response Program (MMRP) in order to meet the requirement of the OSD DERP Management Guidance and the follow-on requirements of the FY02 Defense Authorization Act. The inventory identified 19 MMRP sites at RVAAP totaling 1,460.39 acres that are known or suspected to contain munitions and explosives of concern (MEC). These sites include former open burning and demolition grounds, disposal sites, test ranges, and load lines. Not being maintained for more than 30 years, many of these sites are now overgrown with brush, saplings, and even large trees and some such as Erie Burning Grounds are permanently flooded. A portion of the D Block safety fan originating from the accidental explosion of Igloo 7-D-15 is the only privately owned area (it was always privately owned). The explosive safety risk

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## MMRP Contamination Assessment

of each of the sites was evaluated using the Risk Assessment Code (RAC) process. Site specific information and more on the RAC scores can be found in the CTT Inventory.

Most of the known MEC at RVAAP is at Open Demolition Area (ODA) 2 and Winklepeck Burning Ground (WBG). MEC and MEC scrap are on the surface and buried throughout WBG and ODA #2 and to a lesser degree on the surface beyond the site as a result of kick-outs. Munitions detonated at ODA 2 and burned at WBG were usually un-fuzed with the exception of 40-millimeter grenades, which have an integral fuze. Other sites, such as Fuze and Booster Quarry Ponds, Ramsdell Quarry Landfill, and Erie Burning Grounds were used for disposal of MEC while others, such as Load Line 12 and Buildings F-15 and F-16 contain MEC incidental to production or testing. Only small amounts of MC have been found at a couple sites.

WBG site is currently being cleared of MEC in critical areas to support the construction of a MARK 19 firing range.

The 1.5 acre RCRA unit in ODA #2 was cleared of MEC to a depth of four feet from 1999 to 2000. White phosphorus is present at ODA 2.

The MMRP at RVAAP is based upon the phased approach similar to the restoration (CERCLA) program. Starting in 2005, a Site Inspection (SI) is planned for all sites except for WBG. The SI will further identify the boundaries and types of munitions at the sites using limited geophysical and intrusive studies. The SI will then be used to determine whether additional study and/or remedial action will be necessary. Long-term Management of the sites will be required to ensure the selected remedy continues to be effective and any land use controls are being followed. The SI is expected to be done by December 2006 but remediation of MEC will not be completed until 2012. Ohio EPA will be the lead regulatory agency and all stakeholders including the RAB members and the public, will be encouraged to provide their input into the MMRP.

**MMRP Cleanup Exit Strategy:** The installation plans to complete all SIs by December 2006 and execute follow on phases/actions as required in the individual site cleanup strategies.

### 2003

- Final US Army Closed, Transferring and Transferred Range/Site Inventory for Ravenna Army Ammunition Plant, Ohio, engineering-environmental Management, Inc., November

### 2004

- US Army Corps of Engineers: Archives Search Report for the Ravenna Army Ammunition Plant, June

# RAVENNA ARMY AMMUNITION PLANT

## Military Munitions Response Program Site Descriptions

# RVAAP-001-R-01

## RAMSDELL QUARRY LANDFILL

### SITE DESCRIPTION

Ramsdell Quarry Landfill (MMRP area) is an unlined approximately 4 acre landfill in the bottom of an abandoned quarry to the north of Load Line 1. The site is associated with the AEDB-R site RVAAP-01. During the period 1946 to 1950, the site was used to thermally treat waste explosives and napalm bombs. No historic information has been located for the period of 1950-1976. From 1976, the site was used as a non-hazardous solid waste landfill. The site was permitted as a sanitary landfill in 1978 by the State of Ohio until its closure in 1990. The landfill cover is regulated under RCRA while the remaining portion of the site is regulated under CERCLA. Outside of the landfill cover, MEC exists on slopes and the wetlands. MEC also exists on the south side of the railroad tracks. Groundwater monitoring is being conducted under the facility-wide groundwater monitoring program and is addressed under RVAAP-01. IRP constituents of concern include explosives and metals. The area is currently undeveloped. The MMRP site inspection is underway.

### CLEANUP STRATEGY

The MMRP SI will be completed in early FY07. Further investigation will be conducted and limited cleanup may be conducted.

Land use controls will be addressed under the IRP.

### STATUS

**REGULATORY DRIVER:** CERCLA

**RAC Score:** Serious Risk

**CONTAMINANTS OF CONCERN:**  
MEC, MC

**MEDIA OF CONCERN:** Soil

Phases	Start	End
PA .....	200209 .....	200312
SI .....	200509 .....	200702
RI/FS.....	200710 .....	200810
RD.....	201010 .....	201104
RA(C).....	201105 .....	201209

**RC: 201209**

# RVAAP-002-R-01

## ERIE BURNING GROUNDS

### SITE DESCRIPTION

The Erie Burning Grounds was in operation from 1941 to 1951 and covers approximately 35 acres. The burning grounds are situated on the northeastern corner of the facility next to the Portage/Trumbull County line and are composed primarily of wetlands. The site is associated with the AEDB-R site RVAAP-02. The site was used to thermally treat bulk, obsolete, or off-specification propellants, conventional explosives, rags, and large explosive contaminated items (e.g., railcars) by open burning on the ground surface. The ash residue from the burns was left on the site. An IRP RI was completed and an FS is underway. IRP constituents of concern include explosives, metals, and SVOCs. MMRP COCs are MEC only. Photos in the June 2004 ASR confirm the presence of MEC. The site is currently a primarily undeveloped wetland.

### STATUS

**REGULATORY DRIVER:** CERCLA

**RAC Score:** High Risk

**CONTAMINANTS OF CONCERN:**  
MEC, MC

**MEDIA OF CONCERN:** Soil

Phases	Start	End
PA.....	200209 .....	200312
SI .....	200509 .....	200702
RI/FS.....	200710 .....	200810
RD.....	201010 .....	201104
RA(C).....	201105 .....	201209

**RC: 201209**

### CLEANUP STRATEGY

MC and land use controls are being addressed under the IRP.

The MMRP SI will be completed in early FY07. Further investigation will be conducted and limited cleanup may be conducted.

Currently this area is used for permitted wetlands access for waterfowl hunting and trapping.

Future end uses include using water for fire suppression, dust control, trapping and fishing.

# RVAAP-004-R-01

## OPEN DEMOLITION AREA #2

### SITE DESCRIPTION

Open Demolition Area #2 was used from 1948 to 1991 to detonate large caliber munitions and off-spec bulk explosives. The site was also used to dispose of white phosphorus and bombs. The site is associated with the AEDB-R site RVAAP-04. The demolition area is situated in the central portion of the facility north of Newton Falls Road, north of the fuze and booster lines. The area consists of approximately 25 acres within which there is a 1.5-acre RCRA unit for demolition of munitions. Detonations were performed in pits. After detonation, metal parts were removed from the site. This site is in the MMRP. An IRP RI was completed; only short-term LUCs will be implemented under the IRP. IRP constituents of concern include explosives and metals. A 1.5-acre area north of Sand Creek was cleared of MEC, including fuzes, fuze components, burster tubes and projectiles, to a depth of four feet from 2000-2001. The site is currently undeveloped. The June 2004 ASR confirmed MEC presence.

### STATUS

**REGULATORY DRIVER:** CERCLA

**RAC Score:** High Risk

**CONTAMINANTS OF CONCERN:**  
MEC, MC

**MEDIA OF CONCERN:** Soil,  
Groundwater, Surface Water,  
Sediment

Phases	Start	End
PA .....	200209 .....	200312
SI .....	200509 .....	200702
RI/FS .....	200710 .....	200810
RD .....	201010 .....	201104
IRA .....	200610 .....	200710
RA(C) .....	201105 .....	201209
LTM .....	201410 .....	204409

**RC: 201209**

### CLEANUP STRATEGY

The MMRP SI will be completed in early FY07. Further investigation will be conducted and limited cleanup may be conducted.

Short-term land use controls will be addressed under the IRP site RVAAP-04 and long-term LUCs will be addressed under this site.

MEC is on the surface and sub-surface and in Sand Creek. An EE/CA and ROD for an IRA of MEC in Sand Creek and stabilization of Rocket Ridge bank is planned for FY07.

# RVAAP-008-R-01

## LOAD LINE #1

### SITE DESCRIPTION

Load Line 1 operated from approximately 1941 to 1992 for loading various types of projectiles. Ordnance was demilitarized at this site from 1973 to 1974. Load Line 1 is associated with the AEDB-R site RVAAP-08. The area used for the demilitarizing operations is approximately 3 acres and includes the areas surrounding Bldg CB13B and the demolished Bldg CB14. Propellant pellets were found on this site and a 152mm inert projectile was found in a building and removed. This MMRP site was discovered during the initial IRP investigation of the Load Line. An IRP RI was conducted. Constituents of concern identified during the IRP RI include explosives (excluding the propellant pellets), metals, and SVOCs. The June 2004 ASR confirmed MEC presence.

### CLEANUP STRATEGY

Propellant pellet removal will be proposed in conjunction with RVAAP-08 soil removal under the IRP. If successful, this site will be RC in December 2006.

### STATUS

**REGULATORY DRIVER:** CERCLA

**RAC Score:** Moderate Risk

**CONTAMINANTS OF CONCERN:**  
MEC

**MEDIA OF CONCERN:** Soil

Phases	Start	End
PA .....	200209.....	200312
SI .....	200509.....	200702

**RC: 200702**

RVAAP-012-R-01  
LOAD LINE #12

SITE DESCRIPTION

Load Line 12 operated from 1941 to 1993. From 1941 to 1943 and again in 1946, ammonium nitrate was produced. From 1949 to 1993, artillery projectiles were demilitarized. During IRP work in the fall of 1999, demilitarized 90mm artillery projectiles were found just below the ground surface just north of the access road in the northwest corner of the Load Line #12 area. The demilitarized 90mm projectiles are now stored in ODA #2, Bldg 1501. The site is associated with the AEDB-R site RVAAP-12. The site is no greater than one acre in size and is undeveloped currently. The June 2004 ASR indicates potential MEC presence.

CLEANUP STRATEGY

The MMRP SI will be completed in early FY07. This site will likely go to NFA after the SI. MC is being addressed under IRP.

STATUS

REGULATORY DRIVER: CERCLA

RAC Score: Moderate Risk

CONTAMINANTS OF CONCERN:  
MEC

MEDIA OF CONCERN: Soil

Phases	Start	End
PA.....	200209 .....	200312
SI .....	200509 .....	200702

RC: 200702

# RVAAP-016-R-01

## FUZE AND BOOSTER QUARRY

### SITE DESCRIPTION

The Fuze and Booster Quarry operated from 1945 to 1993. The site consists of three ponds situated end to end and separated by earthen berms in an abandoned rock quarry. The site is associated with the AEDB-R site RVAAP-16.

Prior to 1976, the quarry was used for open burning. Any type of munitions produced at the plant may have been destroyed here. IRP constituents of concern include explosives and metals in groundwater, soil, surface water and sediment. The Fuze and Booster Quarry is approximately 13 acres and located in the south central portion of RVAAP. MEC has been confirmed at North and South Ponds. The June 2004 ASR indicates potential MEC presence.

### CLEANUP STRATEGY

MC is included under IRP.

The MMRP SI will be completed in early FY07. Further investigation will be conducted and limited cleanup may be conducted. LTM will include LUCs, 5-year reviews and MEC monitoring.

Future site use consists of mounted training with no digging.

Currently this area is used for permitted wetlands access for waterfowl hunting and trapping. Future end uses include using water for fire suppression, dust control, trapping and fishing.

### STATUS

**REGULATORY DRIVER:** CERCLA

**RAC Score:** High Risk

**CONTAMINANTS OF CONCERN:**  
MEC, MC

**MEDIA OF CONCERN:** Soil

Phases	Start	End
PA.....	200209 .....	200312
SI .....	200509 .....	200702
RI/FS .....	200710 .....	200810
RD .....	201010 .....	201104
RA(C).....	201105 .....	201209
LTM .....	201410 .....	204409

**RC: 201209**

# RVAAP-019-R-01

## LANDFILL NORTH OF WINKLEPECK

### SITE DESCRIPTION

This site was used from 1969 to 1976. This area is an approximately 2.5-acre, unlined landfill formerly used for disposal of general plant refuse, including explosive wastes residue. In addition, open burn waste from the Winklepeck Burning Grounds was disposed here, including flares and booster cups. The appearance of the land surface suggests trench and fill type disposals. The MMRP site extends from toe of the slope to and including the creek. The landfill is being addressed under the IRP site RVAAP-19. The constituents of concern include MEC and MC.

### CLEANUP STRATEGY

The MMRP SI will be completed in early FY07. Further investigation will be conducted and limited cleanup may be conducted. LTM will include LUCs, 5-year reviews and MEC monitoring.

Future site use consists of dismounted training with no digging.

### STATUS

**REGULATORY DRIVER:** CERCLA

**RAC Score:** Serious Risk

**CONTAMINANTS OF CONCERN:**  
MEC, MC

**MEDIA OF CONCERN:** Soil,  
Surface Water, Sediments

Phases	Start	End
PA .....	200209 .....	200312
SI .....	200509 .....	200702
RI/FS .....	200710 .....	200809
RD .....	201010 .....	201104
RA(C) .....	201105 .....	201209
LTM .....	201410 .....	204409

**RC: 201209**

# RVAAP-032-R-01

## 40-MM FIRING RANGE

### SITE DESCRIPTION

This range is located north of Load Line 8. The range is approximately 5 acres. This range was reported by former workers at RVAAP to have been used for test firing 40mm grenades. The dates of operation for this area were from 1969 to 1971.

This range is associated with the AEDB-R site RVAAP-32. The IR site is addressing all MCs. According to the June 2004 ASR, the area is considered to potentially have MEC presence; however, it was verbally reported the range was cleared as test firing occurred; however, no report has been found.

### CLEANUP STRATEGY

MC is included under IRP.

The MMRP SI will be completed in early FY07. Further investigation will be conducted; however no removal actions are anticipated. Future OHARNG use consists of mounted training with no digging.

### STATUS

**REGULATORY DRIVER:** CERCLA

**RAC Score:** Serious Risk

**CONTAMINANTS OF CONCERN:**  
MEC

**MEDIA OF CONCERN:** Soil

Phases	Start	End
PA.....	200209 .....	200312
SI .....	200509 .....	200702
RI/FS .....	200710 .....	200810

**RC: 200810**

# RVAAP-033-R-01 FIRESTONE TEST FACILITY

## SITE DESCRIPTION

The Firestone Test Facility (also known as the Shaped Charge Test Facility) is located within the Load Line 6 Fuze & Booster Area. The Load Line 6 Fuze & Booster area is associated with the AEDB-R site RVAAP-33. The Firestone Test Facility includes a pond area where the shaped charges were tested underwater. The site occupies approximately one acre and according to personnel interviews it was used to test tube-launched, optically-tracked, wire-guided (TOW) and Dragon missiles from 1970 to 1992. The facility has five separate areas within Load Line 6 that may have been used for shaped charge testing.

## CLEANUP STRATEGY

MC is included under IRP.

The MMRP SI will be completed in early FY07. Further investigation will be conducted. A removal action with LTM is anticipated.

Future site use consists of mounted training with no digging.

## STATUS

**REGULATORY DRIVER:** CERCLA

**RAC Score:** Serious Risk

**CONTAMINANTS OF CONCERN:**  
MEC, MC

**MEDIA OF CONCERN:** Soil

Phases	Start	End
PA.....	200209 .....	200312
SI .....	200509 .....	200702
RI/FS .....	200710 .....	200810
RD .....	201010 .....	201104
RA(C).....	201105 .....	201209
LTM .....	201410 .....	204409

**RC: 201209**

# RVAAP-034-R-01 SAND CREEK DUMP

## SITE DESCRIPTION

The site is approximately 1 acre and is located adjacent to Sand Creek. The Sand Creek Dump was used as a construction landfill for concrete, wood, asbestos debris, lab bottles, 55-gallon drums and fluorescent light tubes from 1950 to 1960. The site is associated with the AEDB-R site RVAAP-34. During an IRA performed in October 2003, two 75-mm inert projectiles were discovered at this site.

## CLEANUP STRATEGY

MC is included under IRP.

The MMRP SI will be completed in early FY07. No further investigation is anticipated. Any required LTM will be conducted under RVAAP-34.

Future site use consists of dismounted training with no digging.

## STATUS

**REGULATORY DRIVER:** CERCLA

**RAC Score:** Moderate Risk

**CONTAMINANTS OF CONCERN:**  
MEC

**MEDIA OF CONCERN:** Soil

Phases	Start	End
PA.....	200209 .....	200312
SI .....	200509 .....	200702

**RC: 200702**

# RVAAP-046-R-01 BUILDING #F-15 AND F-16

## SITE DESCRIPTION

Building F-15 and F-16 were used from approximately 1941 to 1992. Building F-15 and Building F-16 have been demolished but not removed. The site consists of approximately 12 acres and is located in the northwestern portion of RVAAP. The site is associated with the AEDB-R site RVAAP-46. Large caliber artillery projectiles, void of HE, have been found outside the building and disposed. An IRP site characterization was conducted in 2004.

## CLEANUP STRATEGY

MC is included under IRP.

The MMRP SI will be completed in early FY07. Any incidental MEC will be removed under IR Site RVAAP-46.

Future site use consists of dismounted training with digging.

## STATUS

**REGULATORY DRIVER:** CERCLA

**RAC Score:** Moderate Risk

**CONTAMINANTS OF CONCERN:**  
MEC, MC

**MEDIA OF CONCERN:** Soil

Phases	Start	End
PA.....	200209 .....	200312
SI .....	200509 .....	200702

**RC: 200702**

# RVAAP-048-R-01 ANCHOR TEST AREA

## SITE DESCRIPTION

The Anchor Test Area was operated from approximately 1941 to 1952. The site is approximately 2.5 acres (range is 0.1 acre) and currently consists of several dirt mounds and a nearby sand pit. The area's function was to test fire anchoring devices into the ground. RVAAP personnel believe that small explosive devices were used to drive anchors for ropes or cables into the ground. The Anchor Test Area is located in the south central portion of RVAAP. Some metal debris has been found in the area. This site is associated with the AEDB-R site RVAAP-48.

## CLEANUP STRATEGY

MC is included under IRP.

The MMRP SI will be completed in early FY07.

A limited removal action may be needed to clear an area approximately 0.1 acre. No LTM is anticipated.

Future site use consists of mounted training with no digging.

## STATUS

**REGULATORY DRIVER:** CERCLA

**RAC Score:** Serious Risk

**CONTAMINANTS OF CONCERN:**  
MEC, MC

**MEDIA OF CONCERN:** Soil

Phases	Start	End
PA.....	200209 .....	200312
SI .....	200509 .....	200702
RI/FS.....	200710 .....	200810
RD .....	201010 .....	201104
RA(C).....	201105 .....	201209

**RC: 201209**

# RVAAP-050-R-01 ATLAS SCRAP YARD

## SITE DESCRIPTION

The Atlas Scrap Yard is the site of the original camp built to house workers during the construction of RVAAP. The area is approximately 66 acres. All of the buildings were demolished following World War II. Since that time the area has been used as a scrap yard for scrap metal and miscellaneous materials. Scrap metal, including metal from demilitarized munitions and munitions components, was kept at this site pending sale. In September of 1993 when the Ravenna Arsenal, Inc. operating contract expired and the RVAAP went into modified caretaker status, whatever scrap was at this site was left in place. During the RI, MEC was uncovered in the southwest corner of the site. Most of the MEC and MEC scrap was removed from the site in 2003. Any of the munitions or munitions constituents made at or used at the plant may have been disposed of here. This site is associated with AEDB-R site RVAAP-50.

## CLEANUP STRATEGY

MC is included under IRP.

The MMRP SI will be completed in early FY07. NFA is anticipated after the SI.

Future site use consists of mounted training with no digging.

## STATUS

**REGULATORY DRIVER:** CERCLA

**RAC Score:** High Risk

**CONTAMINANTS OF CONCERN:**  
MEC, MC

**MEDIA OF CONCERN:** Soil

Phases	Start	End
PA .....	200209.....	200312
SI.....	200509.....	200702

**RC: 200702**

RVAAP-060-R-01  
BLOCK D IGLOO

SITE DESCRIPTION

The “D” Block of igloos, located in the north-central part of RVAAP, was used to store ordnance and explosives. This block of igloos is now inactive. Bombs were stored in the igloos after they were built in 1941. On 24 March 1943, bombs in igloo number 7-D-15 exploded. There were multiple fatalities from this accident. Bomb fragments and demolished building material was propelled up to 2.9 miles away from the igloo. A majority of the material landed up to 2 miles to the northeast within the RVAAP boundary. Facility personnel made a map showing the distribution of the debris after the explosion. Cluster bombs may have been propelled from the igloo; however, no MEC was reported to be found from the explosion. Ravenna Ordnance Plant personnel reported that the site was considered clean of MEC some time after the explosion. No documented evidence of MEC removal was identified. The igloo was 0.04 acres in size. The site boundary is a circle approximately 3,000 feet in diameter centered on the igloo (a total of 126 acres). A portion of the circle extends beyond the installation boundary and is considered separately as a transferred site. The site is currently undeveloped.

STATUS

REGULATORY DRIVER: CERCLA

RAC Score: Serious Risk

CONTAMINANTS OF CONCERN:  
MEC

MEDIA OF CONCERN: Soil

Phases	Start	End
PA .....	200209 .....	200312
SI .....	200509 .....	200702

RC: 200702

CLEANUP STRATEGY

The MMRP SI will be completed in early FY07. Further investigation followed by removal and LTM may be required.

Future site use consists of dismounted training with digging.

# RVAAP-061-R-01 BLOCK D IGLOO-TD

## SITE DESCRIPTION

The “D” Block of igloos, located in the north-central portion of RVAAP, was used to store ordnance and explosives. This area consists of the portion of the Maximum Fragmentation Distance (MFD) circle that extends beyond the installation boundary, a total of 19.25 acres. Bombs stored in Igloo 7-D-15 exploded on 24 March 1943. There were multiple on-site fatalities from this accident. Bomb fragments and demolished building material was propelled up to 2.9 miles away from the igloo to the northeast, off RVAAP land. A majority of the material landed up to 2 miles to the northeast within the RVAAP boundary. Cluster bombs may have been propelled from the igloo. No other documented evidence of MEC removal was identified.

## CLEANUP STRATEGY

The MMRP SI will be completed in early FY07. Further investigation may be required.

## STATUS

**REGULATORY DRIVER:** CERCLA

**RAC Score:** Serious Risk

**CONTAMINANTS OF CONCERN:**  
MEC

**MEDIA OF CONCERN:** Soil

Phases	Start	End
PA.....	200209 .....	200312
SI .....	200509 .....	200702

**RC: 200702**

# RVAAP-062-R-01

## WATER WORKS #4 DUMP

### SITE DESCRIPTION

The site is approximately 6 acres and is immediately west of Water Works 4 and Load Line 7, in the southwestern portion of RVAAP. The Water Works 4 Dump is a wooded area that has nonexplosive metal parts from Mark-1 shrapnel rounds scattered on the ground surface and partially buried. No other components of the projectiles were found.

### CLEANUP STRATEGY

The MMRP SI will be completed in early FY07. Further investigation is anticipated.

Future land use includes mounted training with no digging.

### STATUS

**REGULATORY DRIVER:** CERCLA

**RAC Score:** Serious Risk

**CONTAMINANTS OF CONCERN:**  
MEC

**MEDIA OF CONCERN:** Soil

Phases	Start	End
PA .....	200209 .....	200312
SI .....	200509 .....	200702

**RC: 200702**

# RVAAP-063-R-01

## AREA BETWEEN BLDGS 846 AND 849

### SITE DESCRIPTION

The site is approximately 2.5 acres between buildings 846 and 849 where construction debris and rubbish were burned. The area is in the immediate vicinity of buildings used actively for storage of OHARNG vehicles and equipment. The site is located along the southern boundary of the central portion of RVAAP. In 1996, one "hammerhead" fragmentation bomb was found by OHARNG personnel on the ground surface at the site and destroyed. In addition, one inert 175 mm projectile was found on the ground surface on the site. The projectile has been removed to proper storage.

### CLEANUP STRATEGY

The MMRP SI will be completed in early FY07. Further investigation is anticipated.

Future land use includes dismounted training with digging.

### STATUS

**REGULATORY DRIVER:** CERCLA

**RAC Score:** Serious Risk

**CONTAMINANTS OF CONCERN:**  
MEC

**MEDIA OF CONCERN:** Soil

Phases	Start	End
PA .....	200209 .....	200312
SI .....	200509 .....	200702

**RC: 200702**

# RVAAP-064-R-01

## FIELD AT NE CORNER OF INTERSECTION

### SITE DESCRIPTION

The site is a 50-acre field at the northeastern corner of the intersection of Paris-Windham Road and Smalley Road. The area was intermittently leased for agricultural purposes between the 1941 and 2000. The field was abandoned as an agricultural field sometime prior to the mid 1970s and was overtaken by the growth of woody vegetation. In 1984 the woody plant growth was cleared with heavy equipment and the field put into hay. The site was leased for the production of hay from 1985 to 2000. One inert anti-tank landmine, which was used for training purposes, was discovered in the northern central portion of the site in the forested area just out of the field in 1996.

### CLEANUP STRATEGY

The MMRP SI will be completed in early FY07.

Future land use includes dismounted training with digging.

### STATUS

**REGULATORY DRIVER:** CERCLA

**RAC Score:** Serious Risk

**CONTAMINANTS OF CONCERN:**  
MEC

**MEDIA OF CONCERN:** Soil

Phases	Start	End
PA .....	200209.....	200312
SI.....	200509.....	200702

**RC: 200702**

## MMRP No Further Action Sites Summary

AEDB-R#	Site Title	Documentation/Reason for NFA	NFA Date
RVAAP-005-R-01	WINKLEPECK BURNING GROUNDS	The site is currently being developed as a MK19 range by the OHARNG, therefore this site is not eligible for MMRP	200603

***Initiation of MMRP:*** 2002

***Past Phase Completion Milestones***

**2003**

PA Completion on all sites, December

***Projected ROD/DD Approval Dates:*** 2008

***Projected Construction Completion:*** 2012

***Schedule for Five Year Reviews:*** No five year reviews required.

***Estimated Completion Date of MMRP including LTM:*** 2044

## Ravenna AAP MMRP Schedule

(Based on Funding Constraints)

AEDB-R#	PHASE	FY07	FY08	FY09	FY10	FY11	FY12	FY13	FY14	FY15+
RVAAP-001-R-01	RIFS									
	RD									
	RA(C)									
RVAAP-002-R-01	RIFS									
	RD									
	RA(C)									
RVAAP-004-R-01	RIFS									
	RD									
	IRA									
	RA(C)									
	LTM									204409
RVAAP-016-R-01	RIFS									
	RD									
	RA(C)									
	LTM									204409
RVAAP-019-R-01	RIFS									
	RD									
	RA(C)									
	LTM									204409
RVAAP-032-R-01	RIFS									
RVAAP-033-R-01	RIFS									
	RD									
	RA(C)									
	LTM									204409
RVAAP-048-R-01	RIFS									
	RD									
	RA(C)									

## MMRP Costs

### *Prior Years Funds*

**Funds up to FY04: \$0K**

<b>Year</b>	<b>Site Information</b>	<b>Expenditures</b>	<b>FY Total</b>
<b>FY05</b>	SI - All sites	290K	<b>\$290K</b>

**Total Funding up to FY05: \$290K**

### *Current Year Funds*

<b>Year</b>	<b>Site Information</b>	<b>Expenditures</b>	<b>FY Total</b>
<b>FY06</b>		\$0K	<b>\$0K</b>

**Total Funding FY06: \$0K**

**Total Future Requirements: \$8,848K**

**Total Program Cost** (from inception for completion of the MMRP): **\$9,138K**

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## Community Involvement

The RVAAP Restoration Advisory Board (RAB) was established in 1996 and has 25 members consisting of 23 community members and 2 non-community members. The community members include an appointee from each of the surrounding 6 townships, one representative appointed by the Trumbull County Commissioners, a representative appointed by the Portage County Commissioners, and 15 members chosen from the general public. One of the community members is elected as a community co-chair by majority vote. The two non-community members include a representative of the Ohio EPA and an Army installation co-chair appointed by the installation. A RAB operating procedure was adopted by all members on February 19, 1997. A copy can be found on the RVAAP web site [RVAAP.org](http://RVAAP.org), as well as in two public repositories.

The RVAAP RAB generally meets every two to three months. All meetings are open to the public and are rotated among public places within the townships around the installation. Current topics are addressed at the meetings and a speaker is generally featured. There have been presentations by the Ohio Department of Health addressing health issues related to the cleanup; by the contractors that are performing remediation work; by WES on the explosive uptake by vegetation; Corps of Engineers describing newly identified contaminated sites; and the US Army Center for Health Promotion and Preventive Medicine to explain the rating of sites for funding and the process of performing ecological and human health risk assessments. The minutes of all RAB meetings are recorded. All meetings are announced in the local media. Regular RAB meetings were held during the past year covering such topics Performance Based Contracts at LLs 1-4, progress of the remedial investigations at the high RRSE AOCs, and thermal decontamination at excess production buildings. A tour was held in August 2005 for RAB members, the media, and elected officials to view ongoing restoration activities.

All IRP records are made available to the RAB members and any other interested parties through the two public repositories. IRP and other RVAAP documents are available at [www.RVAAP.org](http://www.RVAAP.org). The RAB receives technical assistance for public participation (TAPP) (technical review).

In 2003, a Community Relation Plan was developed to facilitate communication, identify issues of concern and serve as a guide for public involvement goals and objectives. The plan outlines the many ways that Ravenna AAP involves the community in the restoration activities, including through the RAB, site tours and issuance of fact sheets and newsletters.